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On the Cover
Illustration by Oliver Wolfson

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MACWORLD.COM'S TOP 5
The top 5 stories on Macworld.com are:

1 **TomTom for iPhone En Route**
Dan Frakes got the skinny on the upcoming turn-by-turn navigation solution (macworld.com/5175).

2 **The iPhone's Distinctive Dozen**
These 12 apps made their mark during the App Store's first year (macworld.com/5176).

3 **App Guide: 'All About the Benjamins' Collection**
Our new App Guide highlights apps that can help you keep tabs on your finances (macworld.com/5177).
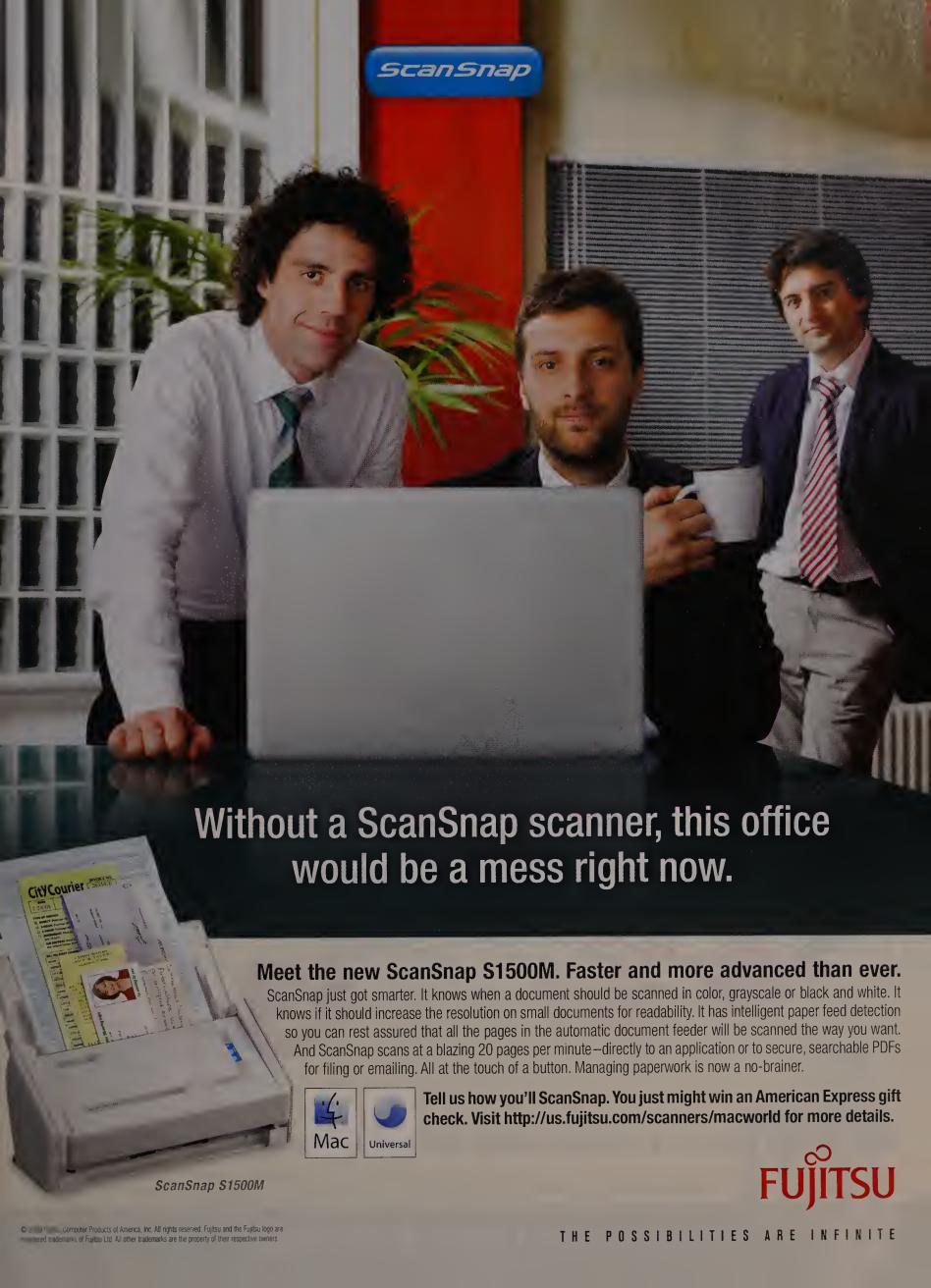
4 **Create Stronger Passwords**
Joe Kissell shows you how to make your personal data harder to hack (macworld.com/5178).

5 **First Look: Firefox 3.5**
Speed boosts and private browsing highlight changes to Mozilla's browser (macworld.com/5172).

(Ranking valid as of July 31, 2009.)

Smart, Not Cheap

The many ways Mac users can save money

I'm bracing for the flood of snarky comments that will no doubt greet this month's *Macworld* cover. "'20 Mac Money Savers'?" they'll scoff. "Mac users don't care about saving money. Otherwise, they'd buy PCs!"

It's an argument we Mac users have been hearing for years. It was revived most recently by Microsoft's "Laptop Hunters" ads. (See my June 2009 column "The Low-Price Leader?" for more on those.) But it just isn't true.

The truth is that Mac users are all about value—which is not the same as being cheap. Instead of just looking at the hardware specs and the price tag, Mac buyers consider the whole package—the operating system, bundled software, and third-party apps, as well as hardware and price—in their calculations.

Bargain Hunting

Every time we compare Apple's computers to comparably equipped Windows PCs, we find that the prices of Macs are in the same ballpark as those of the PCs. Sometimes Apple's prices are higher; sometimes they're lower. For example, I recently visited Dell's Web site and configured a laptop with roughly the same specs as Apple's $1,699 15-inch MacBook Pro. The Dell Latitude laptop's final price: $1,621.

That price comparison didn't include the value of iLife, which comes with the Mac, or the cost of the virus software subscription I'd need for that Dell PC. More important, the comparison doesn't take into account the fact that one computer runs Mac OS X and the other runs Windows Vista. If you factor in all that, the value scale begins to tilt toward the Mac. (For more on Mac versus PC price comparisons, see Dan Frakes's *Spotlight* column on page 96.)

We're not the only ones who have come to that conclusion. While overall computer sales have slowed as the

Mac users are all about value—not about being cheap.

economy has faltered, sales of Macs have kept on chugging. From April through June of 2009, for example, Apple had the second-highest Mac sales for any three-month period in its history. That tells me that Mac users appreciate good deals, particularly when times are tough.

And their appreciation isn't limited to computers. That's why we created this month's cover story, "Save Money with Your Mac" (page 50). There, you'll find 20 tips for using your Mac to manage and spend your money wisely, from finding good shopping deals to buying a used Mac. Our other feature, "Budget Mac" (page 60), shows how you could equip your Mac for different pursuits while sticking to a tight budget.

The common bond that holds Mac users together isn't that we're spend-thrifts. It's that we know the lowest price doesn't necessarily get you the best deal.

Behind the Scenes

If you've ever wondered how we do what we do here at *Macworld,* you should check out two videos we recently posted online.

The first was made by photographer Peter Belanger, who shoots most of the photos we use in the magazine. He created a time-lapse video documenting the creation of our September issue's cover. For more on that, see "How a Macworld Cover Is Made" at macworld.com/5199.

Second, every week, we post a new how-to video on Macworld.com. (If you haven't watched one, go to macworld.com/5202 or subscribe to the weekly Macworld Video on iTunes.) For a behind-the-scenes look at how we make them, check out macworld.com/5203.

Twitter Brainpower

Finally, I wanted to say thanks to those *Macworld* readers who helped us produce this month's cover.

That cover features some fanciful Apple-inspired coins created by Oliver Wolfson. We wanted to come up with some appropriate inscriptions for the coins, to replace the usual *E Pluribus Unum.* So I posted a note on Twitter (twitter.com/jsnell), asking for ideas.

The responses were great. Among my favorites: *This coin will be obsolete in 18 months...Don't steal money...BOOM...Real Artists Ship.* And many variations on *In Jobs We Trust.* Many respondents observed that a real Apple coin would have no writing on it at all.

The most popular suggestions, though, were variations on Apple's current small-print slogan: *Designed by Apple in California, Assembled in China,* and that's what we used. So I wanted to salute you, my fellow Twitterers, from this magazine column—written by me in California and printed in Minnesota. ⊠

What do you think? What would *you* have put on the coins? More important, how do you use your Mac to save money? Write me at jason_snell@macworld.com or join the discussion at forums.macworld.com.

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Who Needs a Genius?

Macworld readers take on troubleshooting tasks

Help Yourself

As a former lead Mac Genius at a fairly busy Apple Store, I applaud *Macworld*'s tips ("Troubleshoot Like a Genius," July 2009). For every customer who makes an appointment and does things by the rules, another doesn't. That, long hours, merely adequate training, and retail-level pay mean Apple burns through Mac Geniuses quickly. Volume is another big issue facing a lot of Apple Stores—the sheer number of products that need work usually outweighs what the staff can do. That's why third-party authorized service providers can help Apple and their customers get back up and running faster than the Bar can sometimes.

🗨 **ismhackett**

I'd like to suggest a method of disk repair I haven't seen described. It is a reasonable assumption that recording surfaces suffer wear and tear and that it's especially severe at frequently addressed locations, such as commands to draw a window. Whenever the spinning wheel confronts me, I do a force-quit and inspect the crash log. The bad-address designation stands out as a cause of failure. A simple way of changing critical locations is to make a hard-disk backup on an external drive, reformat the original drive (even zero it out), and reinstall from the backup. Similarly, the installation of a fresh operating system will set the previous system's damaged locations to inactive status and generate good performance.

✉ **Wolfgang Gunther**

While this is a time-honored technique, I'm not sure I would trust it anymore. The problem is that it makes the assumption that once you map out the identified bad blocks, you won't see new ones anytime soon. At one time, this might have been a reasonable bet. But these days, hard drives are so reliable in general that if and when a problem like this occurs, it likely means the drive's at the end of its life. Also, drives are so much cheaper these days—why take chances with your data? Just get a new drive.—Ted Landau

I have one amendment to the second of "Ted's Top Tips" in your troubleshooting feature. After unplugging (or switching off) a device, wait 30 seconds before plugging it in or restarting it. As an electrical engineer explained it to me, many high-quality electronics contain a capacitor that has sufficient charge to keep the device going through power glitches. During the wait, the device uses up the charge in the capacitor and truly shuts down.

✉ **Robert K. Wismer**

We received the latest issue of *Macworld* just as our computer would not turn on, and the troubleshooting article was just what we needed. We had already called a repair shop in the community, but it had a week's wait. We got our mail with that feature story highlighted on the

OVERHEARD ON THE FORUMS

Apple can use hardware sales to subsidize the cost of software development, thus placing a choke hold on Microsoft's outrageous software profit margins. Microsoft doesn't have this luxury.

Mjtomlin
macworld.com/5158

I don't really need a compass to tell me where I am going, unless I am hiking in the woods. You would look foolish in the city directing your compass, screaming out, "Due north, we need to go due north!"

Hillstones
macworld.com/5157

315° NW

cover, and we read it. Within minutes we had our Mac up and running. Thank you.

✉ **Daniel and Sherry Fick**

In Defense of Green

I take exception with the reader who thinks building "green" computers isn't important (*Feedback,* July 2009). Sure, I want it to just work too, but as a consumer I like to support products that are smart and sustainable. I don't think that makes

me extreme, nor do I consider Apple's decision to make its products more earth-friendly to be pandering. To me, it is just good sense and good business.

✉ **Connie Mahan**

Better Mobile Service Plans

A better question than whether the iPhone should move to Verizon is whether the iPhone should move to the consumer ("Verizon and Apple: To Be or Not to Be?" *MacUser,* July 2009). When will U.S. consumers wake up? In the rest of the world I can buy any mobile phone (except the iPhone), then buy a SIM card from any phone company in that country and stick it into the phone, and be in business. If I don't like the service or coverage, I just buy a SIM card from another company. Apple could sell far more iPhones this way, and the consumer would finally have some real choice: buy the phone you want, get the phone service you want, and change whenever you want.

✉ **Charles Kubler**

Many carriers package netbooks with their service as the newest mobile solution. What if Apple put its iPhone software on a 9- or 12-inch tablet computer and sold it exclusively to Verizon? AT&T would keep the iPhone, and Verizon would be able to sell the tablet solution with service and accessories, such as separate keyboards, styluses, mice, power accessories, and cases. Apple could expand on its iPhone interface with more real estate, and truly create the next generation of mobile device.

✉ **Ty Smith**

Is Verizon willing to dance to Apple's tune this time around? I'm not talking about revenue-sharing agreements, but things like visual voice-mail infrastructure and control over handset functionality. One rumored reason the BlackBerry Storm doesn't have Wi-Fi is that Verizon pushed Research In Motion to leave it out. Has Verizon decided to loosen the tight control it has traditionally exercised over handsets?

💬 **tbutler67**

Is your connection stuck in the slow lane? Here's how to kick it into gear.

Speed Up the Internet

BY GLENN FLEISHMAN

Need for Speed

Before you call an electrician, there's a no-cost step you can try in order to improve your Internet access ("Speed Up the Internet," July 2009). If you're handy with small tools, you can break, clean, and remake the connections in your home telephone wiring. This certainly includes the home side of the demarcation point, as well as the phone outlet box where your modem is plugged in, and might include additional junction points in between. These connections could be screw type or punch-down blocks. In either case, cleaning simply means using a moderately sharp-edged tool to scrape the corrosion off the end of each phone wire before putting the connection back together. If the wire itself is intact, this can make a huge difference in your signal quality, especially in an older home.

☐ **Carl Zimmerman**
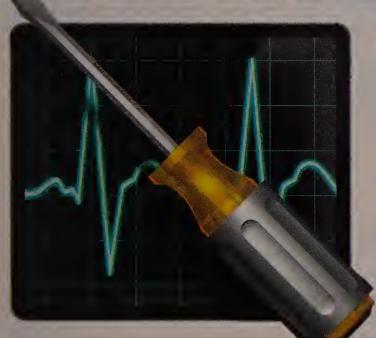
Mini versus PlayStation 3

In regard to the idea of using a Mac mini as a media center ("Mini Media Hub," July 2009), I've been using a much better solution—my PlayStation 3. A bare-bones mini from the Apple Store is $600. A PS3 from Best Buy is $400. I downloaded MediaLink from Nullriver Software for $20 (nullriver.com/medialink), and within minutes I had my entire media library available to display on my big-screen HDTV. The Web browser works fine, especially with a wireless keyboard. On top of all that, you get a great video-game system with a wide array of titles to choose from for a couple hundred dollars less than the mini.

A lot of people complain that the PS3 is expensive compared to an Xbox or a Wii, but there's no denying you get more features for the price—especially with the inclusion of Blu-ray. I originally bought the PS3 solely for playing video games; but over the last year, I find that I use it more for listening to music, Web browsing, and watching movies than I do for gaming. It has been a pleasant surprise, and has definitely been worth the money.

☐ **Nate Man**

OPERATING SYSTEMS

The Intel-Only Future

Latest releases of Final Cut and Logic suggest PowerPC's days are numbered BY ROB GRIFFITHS

Think back to a simpler time. Macs ran on PowerPC chips, developers had to support only one type of CPU, and the notion of Apple actually using processors from Intel still made people laugh.

Fast-forward to the present day. With the recent releases of updated versions of Final Cut Studio and Logic Studio (see "Apple Introduces New Logic Studio" for more details), Apple has now moved its flagship video- and audio-editing suites exclusively to the Intel chip set—previous releases were Universal apps compatible with both PowerPC and Intel CPUs.

And Adobe has been making similar moves with some of its programs as well. Both Soundbooth CS4 and After Effects CS4 are Intel-only programs, and the company recently announced that future versions of the Creative Suite will run only on Intel-based Macs. In explaining the move, Adobe cited Apple's announcement that Mac OS X 10.6, aka Snow Leopard, will not support the PowerPC chip set.

"With Apple's future development focused on Intel Macs, Adobe is aligning its resources accordingly," read Adobe's press release.

Beyond these mainstream productivity apps, many new games are shipping with Intel-only requirements—Call of Duty 4, for instance. There are many other such examples; Transgaming Technologies lists a host of them on its Cider page. (Cider is a technology that lets developers wrap their Windows games in a Mac-compatible bundle, so that they can be ported to the Mac with minimal effort.)

Why Now?

It seems that each time there's an Intel-only release, you hear an uproar from the PowerPC-using population. The unfortunate reality for PowerPC users—and hey, I am one, since I still use my 12-inch PowerBook G4 with regularity—is that the PowerPC chip is dead. It's toast. It's history. The first Intel-powered Macs were introduced in January 2006, making the most recent PowerPC machine nearly four years old now. In computing years, that's a really long time.

For developers, the transition to the Intel chip set complicated the task of developing a new product, or even updating an existing one. They had to consider whether the upgrade would support PowerPC, Intel, or both. Apple tried to ease the process with the option to develop a Universal application that worked on either CPU. In many cases, though, developers couldn't rely on this

simple solution, since Intel-specific code is needed to take advantage of some of the chip's capabilities.

So while there are probably more than 10 million PowerPC machines out there—and that's a lot of potential customers—engineering a new release (or updating an older release) to support those machines isn't a trivial task. Consider that those older machines have less-powerful CPUs (by many magnitudes in some cases), slower graphics cards, and probably less RAM than today's machines.

Developers have to run the numbers, weighing the profit from possible incremental sales against the time and effort required to provide PowerPC versions of their apps. As recent announcements have shown, many are choosing to go the Intel-only route.

Snow Leopard

If you think the trend is noticeable now, though, just wait until the Intel-only OS

X 10.6 (Snow Leopard) ships. I believe OS X 10.6 will further accelerate the move to Intel-only applications with its multitude of developer-centric features, designed to ease development and speed program execution. There's just so much goodness in it for developers that OS X 10.6 will be a very strong

The unfortunate reality for PowerPC users—and hey, I am one—is that the PowerPC chip is dead.

force driving Intel-only application development.

Ever since Apple made the announcement in June 2005 that it would switch to Intel-built processors, Intel-only is the direction in which we've been headed. Apple has now clearly stated as much with the release of Final Cut Studio and Logic Studio in Intel-only form, and the release of OS X 10.6 will further reinforce that trend.

If you're a PowerPC user, the move to Intel-only apps doesn't mean your current machine is worthless. It just means its abilities will be limited to those programs it can run today, and probably one or two more releases of the most popular productivity apps. I anticipate, for instance, that the next version of Office

will support both platforms. Beyond that, though, the future of application development is clearly limited to Intel.

Personally, even as someone who uses his PowerPC machine regularly, I don't think that's a bad thing. Technology marches on, and it's simply not realistic to expect Apple and developers to support two platforms indefinitely. ☒

———

Rob Griffiths is a *Macworld* senior editor.

Apple Introduces New Logic Studio

The same day that Apple updated its Final Cut Studio suite (read our review at macworld.com/5200), the company also released the second iteration of its Logic Studio suite of multimedia audio tools. The new version includes Logic Pro 9, MainStage 2, Soundtrack Pro 3, Compressor 3.5, and WaveBurner 1.6. Additionally, Logic Studio includes all six of Apple's Jam Pack loop sets, along with its bundled sound effects, surround sound music beds, EXS24 samples, and impulse response files.

Among its more than 200 new features, Logic Studio includes the Amp Designer and Pedalboard plug-ins, with features similar to the guitar tracks and stomp-box effects introduced in iLife '09's GarageBand. Amp Designer includes 25 amplifiers and 25 matched cabinets that can be captured with one of three virtual microphones. You can mix these amps and cabinets, and each amp includes five EQ and ten reverb presets. Pedalboard adds 30 stomp-box effects that users can array along a virtual pedal board. You can trigger these effects via a MIDI or USB controller, unlike GarageBand's stomp boxes.

For those users taking to the stage, MainStage 2—Logic Studio's live performance tool—includes two new plug-ins. The first, Play-

back, plays a prerecorded backing track—chorus background vocals, say—that you can trigger with a USB or MIDI controller. The other is Loopback, a sound-on-sound tool similar to the venerable EchoPlex tape-based loop device popular in the 1970s. With Loopback, you can record a track onstage and then add layers with each pass of the virtual tape.

The new Logic Studio also adds functionality to Logic Pro that makes difficult studio chores easier. Flex Time, for example, lets you move digital audio snippets forward or back in time, as well as lengthen and shorten parts within a phrase to change the rhythmic feel. Drum Replacer replaces a recorded drum track with triggered samples. And Selective Track Import allows you to move selected tracks and their setups from one project into another and, with the help of Flex Time, even map the new project's tempo and feel onto the imported tracks.

The new Logic Studio costs $499. Upgrades from the previous Logic Studio or Logic (including Logic Gold 5 and Logic Platinum 5 and the succeeding Gold, Platinum, and Pro editions) are $199. Logic Express owners can purchase an upgrade to Logic Studio 2 for $299.—CHRISTOPHER BREEN

LEGAL

Psystar Hires New Lawyers

Psystar, which had trouble paying its last legal team, has lined up new representation in its ongoing dispute with Apple. The Mac clone maker announced that Camara & Sibley, a Houston-based law firm, will represent it in the legal battle stemming from Psystar's move to sell PCs with Mac OS X preinstalled.

Apple sued Psystar last year, arguing that the Miami-based company was infringing on its copyright by selling PCs loaded with Mac OS X. Psystar contends that its OpenPC—an OS X–running PC that goes for a fraction of the cost of Apple's hardware—is perfectly legal.

"Apple's copyright on OS X doesn't give Apple the right to tell people what they can do with it after they buy a copy," Psystar wrote when announcing its new legal team. "Apple can't tell an applications developer that it can't make a piece of Mac-compatible software. They can't forbid Mac users from writing blogs critical of Apple. And they can't tell us not to write kernel extensions that turn the computers we buy into Mac-compatible hardware."
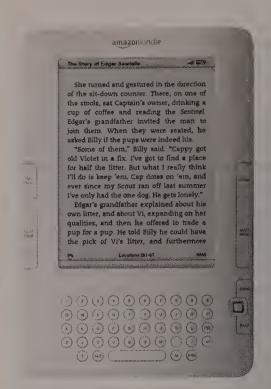
Psystar says a new trial date in its dispute with Apple has been set for January 11, 2010.—PHILIP MICHAELS

▶ Tech Trends

On Top at the Top

Apple's release of new MacBook Pros helped further expand its share of the premium PC market in June 2009. According to researcher NPD Group, Macs accounted for 91 percent of U.S. consumer retail PC purchases costing more than $1,000—a substantial increase over September 2006, when that figure was only 51 percent.
—MARYANN JONES THOMPSON

PDAs

Amazon Deletes Kindle Books, Then Apologizes

In July 2009, Amazon removed several books from its Kindle Store—and subsequently deleted those books from the Kindles of customers who had purchased them (while refunding the purchase price to customers' accounts).

Amazon received blistering criticism for the move. The company then explained that the Amazon publishing partner that sold those books, which included George Orwell's *1984* and *Animal Farm,* did not have the rights to distribute them in the United States.

On Amazon's Kindle Community forum, Amazon founder Jeff Bezos later apologized for the remote deletions. "This is an apology for the way we previously handled illegally sold copies of *1984* and other novels on Kindle. Our 'solution' to the problem was stupid, thoughtless, and painfully out of line with our principles. It is wholly self-inflicted, and we deserve the criticism we've received. We will use the scar tissue from this painful mistake to help make better decisions going forward, ones that match our mission."—**JASON SNELL**

HARDWARE

GiO, from Apogee (www.apogeedigital.com): Audio interface and foot controller works with the latest Logic Studio and GarageBand '09 ($395).

LV-7275, from Canon (www.usa.canon.com): Multimedia projector features a native XGA (1,024 by 768) resolution with an aspect ratio of 4:3 and offers 2,600 lumens of brightness ($999).

Modem Mate, from Nova Media (www.novamedia.de): External antenna offers up to 2 dBi of increased signal strength for 3G modems (€40).
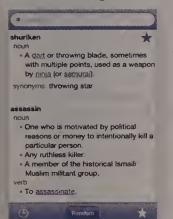
Lumix DMC-FZ35, from Panasonic (www.panasonic.com): 12.1-megapixel camera features an 18× optical zoom, optical image stabilization, and 720p AVCHD Lite recording ($400).

Did Apple Censor an iPhone App?

In August, Daring Fireball's John Gruber wrote that the App Store approved the Ninjawords Dictionary iPhone app only after the developer removed "objectionable" words. Does that mean Apple censored Matchstick Software's $2 app? In an e-mail to Gruber, Apple's marketing manager Phil Schiller said that Apple flagged the program because it contained offensive "urban slang" that more traditional dictionaries omit. The developer, he said, removed the words to gain approval more quickly, prior to implementation of iPhone 3.0's parental controls, which offer the option of a 17-plus rating (a rating the app later received).

—DAN MOREN
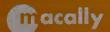
Microsoft Alters 'Laptop Hunters' Ads

Microsoft's "Laptop Hunters" campaign, you may recall, features actors in the role of buyers-on-the-street looking for low-cost laptops that meet some rather specific technical specifications. I don't think it qualifies as a spoiler when I tell you that each one ends with the person choosing a Windows-based laptop.

Apple recently took umbrage at one such commercial, in which incoming law student Lauren and her mother sniff about Apple pricing. "This Mac is $2,000, and that's before adding anything," moans Mom. In June, Apple cut prices on its MacBook Pro models to less than that. Microsoft, however, continued to air its old—and outdated—TV ads, prompting a phone call from Cupertino. As *Advertising Age* reported, Microsoft edited the ad to remove the offending portion.—PHILIP MICHAELS

Google Voice Apps Rejected, Removed from App Store

Recently I managed to snag an elusive invite to the Google Voice telephony service. Google acquired the developer, GrandCentral, two years ago, and the service has been in beta ever since. The Google Voice service allows you to choose a phone number and have it ring all of your phones at once; you can also screen callers as they leave voice mail, choose not to have certain phones ring during certain times (such as on the weekend), and even have recordings of your voice mails sent to your e-mail, along with machine transcriptions.

It's easy to see why an iPhone-native Google Voice application would have its appeal. My iPhone, after all, is the only phone I have: both my work and my personal calls come to that number, so it would be nice to have a little more control over managing those calls. Thus, the news that Apple had rejected Google Voice apps and removed them from the App Store caused me consternation. The first shoe to drop was the removal of Sean Kovacs's GV Mobile, a third-party app that allowed Google Voice subscribers to not only dial numbers using the iPhone's address book, but also send SMS messages, play back voice mails, and even make cheap international calls.

Clearly, this caused someone at Apple considerable discomfiture, for Kovacs said on his blog that he received a call from the company informing him that it was removing the program for the vague justification of "duplication of features." Kovacs also claimed on his Twitter account that Apple senior vice president Phil Schiller had initially approved the app. Apple likewise pulled other Google Voice programs such as GVdialer and VoiceCentral.

Nor are the third-party developers alone in seeing Apple turn down apps they've submitted to the App Store. Google released Google Voice programs for both the BlackBerry and Android platforms, but an iPhone offering was notably absent. In a statement to tech blog TechCrunch, a Google spokesperson said that the company had submitted an application to the App Store, but that Apple had rejected it—reportedly at the behest of its carrier partner, AT&T.—**DAN MOREN**
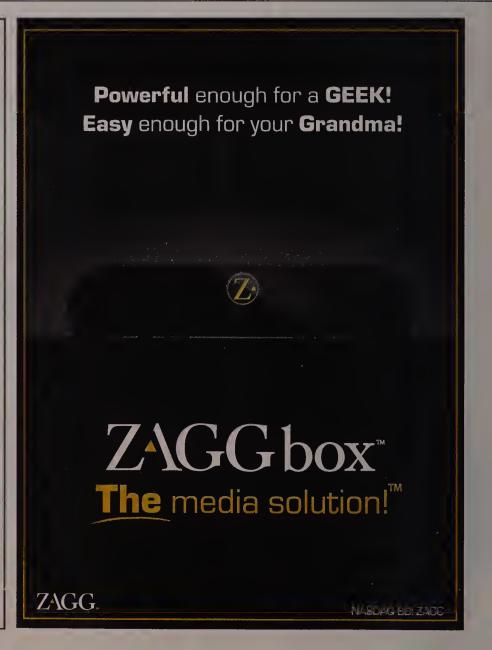
GAMES

Blizzard Delays StarCraft II

StarCraft II: Wings of Liberty won't be winging its way to a PC or Mac on schedule. Blizzard Entertainment announced that the eagerly anticipated game won't meet its 2009 release date; instead, the company is pushing back the launch until the first half of 2010.

According to Blizzard, the reason for the delay is a longer-than-expected development time for upgrading its Battle.net online multiplayer service. —CHRIS HOLT

iPHONE

Apple Lets iPhone Developers Add Search Keywords
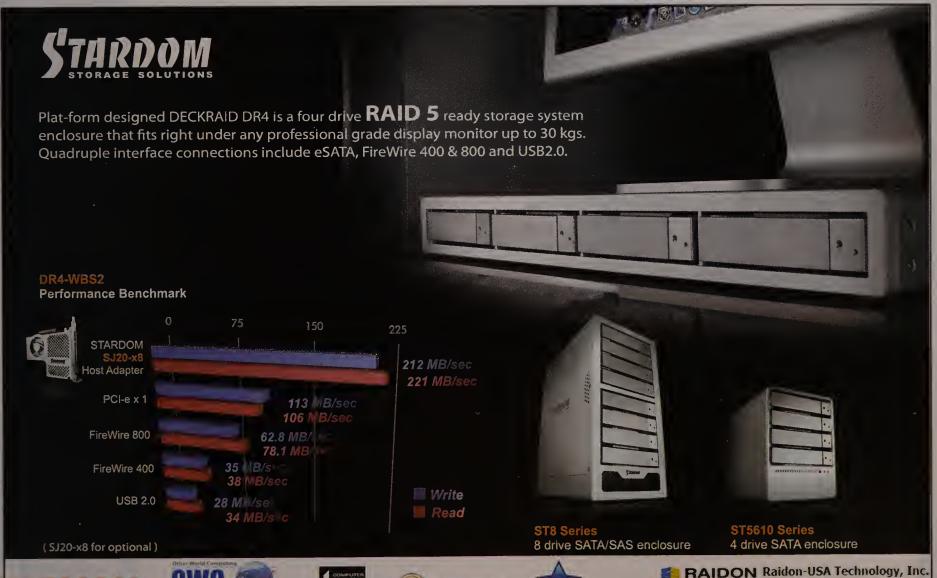
A recent change to the App Store allows developers to add search keywords to the descriptions of their applications, so they can expand the terms that will bring up their work on a search (without having to overload the limited description field). This is a welcome improvement, since it helps developers expose their apps to a wider audience.

So that's good, right? Well, unfortunately, as often happens with the App Store, it works better in theory than in execution. Instapaper developer Marco Arment noted in a blog post that the keyword entry is glitchy, with conflicting information on how many characters are allowed and limited help on how the store's search algorithm processes keywords.

Another iPhone developer informed *Macworld* that keywords are frozen once entered, and a developer can only change them when updating the app—potentially adding to the proliferation of minor updates that must undergo the lengthy approval process, and making said process even lengthier.—DAN MOREN
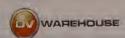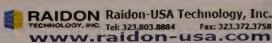
Creating a Macworld Cover

Ever wonder what goes into putting together the cover for an issue of *Macworld*? We can give you a hint: a lot of time and hard work. To find out more, check out this neat time-lapse video at macworld.com/5199.
—JONATHAN SEFF

By the Numbers

1969
Year that programmer Ken Thompson created Unix, now celebrating its 40th anniversary.

23 Times
How much more likely an accident is to occur when a driver is texting behind the wheel, according to a new study.

Number of computers "enslaved by cybercriminal botnets" for spam purposes, according to a recent McAfee report.

14 Million
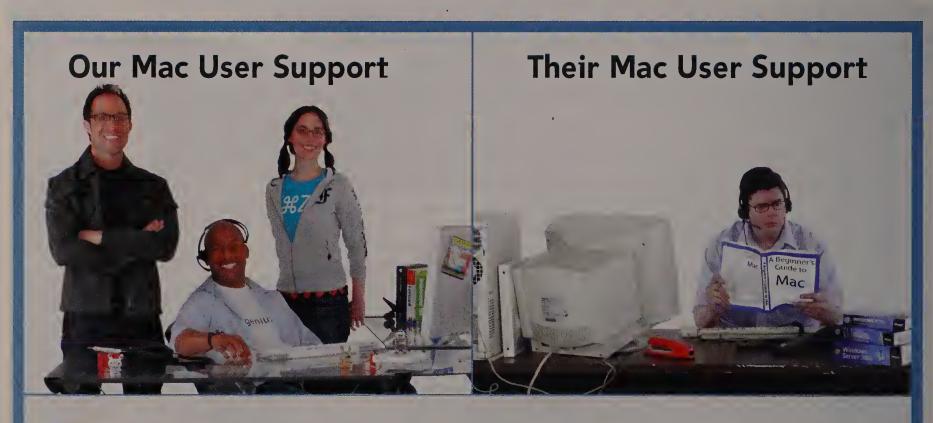
Schmidt Steps Down from Apple Board

Apple announced that Eric Schmidt, the CEO of Google, has resigned from Apple's board of directors (he has served on the board since 2006).

In a tersely worded statement, Apple CEO Steve Jobs said that Google's smart-phone and OS efforts mean that Schmidt would have to recuse himself from larger portions of board meetings. The Federal Trade Commission is investigating whether Schmidt's presence violated federal antitrust legislation preventing "interlocking directorates" between rival companies.—PETER COHEN

Apple: Jailbreaking Could Kill Transmissions

Think jailbreaking your iPhone doesn't hurt anybody? Well, Apple begs to differ. The company has told the U.S. Copyright Office that modifying the iPhone's operating system could crash a mobile phone network's transmission towers or allow people to avoid paying for phone calls.

The claims are Apple's contribution to the Copyright Office's regular review of the U.S. Digital Millennium Copyright Act (DMCA), a law that forbids the circumvention of copy-control mechanisms.

Apple says that modification of the phone's software, or jailbreaking, could lead to major network disruptions, permit anonymous calls, or even allow the carrying out of denial-of-service attacks. Apple seeks to counter a request to the agency from the digital rights group Electronic Frontier Foundation (EFF) that the Copyright Office allow modifications to the iPhone's software; the EFF claims it does not violate the DMCA.

The U.S. Copyright Office holds hearings every three years to consider requests for exceptions to the nation's copyright laws. It is expected to make a decision in the case later this year.
—JEREMY KIRK

iPod + iTunes News
Everything you need to know about digital music

iPod Touch Ascendant as Traditional iPod Sales Fall

In the third financial quarter of 2009, Apple sold 10.2 million iPods—800,000 less than in both the previous quarter and the same quarter a year ago.

During the conference call with analysts, Apple CFO Peter Oppenheimer went out of his way to say that the iPod touch itself did "extremely well in the quarter, growing more than 130 percent" compared with the same quarter a year ago. And while iPod sales in general fell 7.2 percent compared with last quarter, the iPod touch was selling like gangbusters.

The news didn't catch Apple off guard, however. "We expect our traditional MP3 players to decline over time as we cannibalize ourselves with the iPod touch and the iPhone," he said.
—JASON SNELL

Apple Drops DRM Case against BluWiki

The EFF and Apple are standing down over a legal dispute involving the Web site of BluWiki (www.bluwiki.com). Apple is no longer going after BluWiki's operators for what it says was a violation of the DMCA, and in return the EFF has dropped its own lawsuit against Apple, according to tech news site The Loop.

Apple's lawyers had e-mailed BluWiki, a site involved in the creation of wiki pages, for its role in distributing information about the iPodhash project, which aims to reverse-engineer elements of Apple's digital rights management technology. Apple claimed this distribution violated aspects of the DMCA involving the circumvention of file protection.

This raised the ire of the EFF, which said that what Apple was doing was tantamount to trying to quash BluWiki's right to free speech.—PETER COHEN

PALM BRINGS iTUNES SYNCING BACK TO THE PRE

In a continuing game of cat-and-mouse, Palm has reenabled iTunes syncing for owners of its Pre smart phone, overcoming Apple's move to sever the handset's access to media files stored in iTunes.

The release of Palm's webOS 1.1 restored the Palm Media Sync feature, which lets the Pre connect and sync DRM-free media files with iTunes.

The release of webOS 1.1 came eight days after Apple released iTunes 8.2.1, which blocked Pre users from accessing the software. Whether Pre syncing will still work by the time you read this is another story.—SUMNER LEMON

SOFTWARE

Scorpio Blue, from Western Digital (www.wdc.com): 2.5-inch Serial ATA hard drive now comes in a 1TB capacity ($250).

Bru Server 2.0, from Tolis Group (www.tolisgroup.com): Updated business-oriented backup system gets a redesigned interface and new user-initiated backup and restore functions (pricing starts at $599).

EMC Retrospect 8.1, from EMC (www.retrospect.com): Backup software restores support for PowerPC-based Macs while improving performance on Intel machines (pricing starts at $129).

FontGenius, from FontGear (www.fontgear.net): Font search and identification utility examines pictures and identifies the typeface of any text in the image ($40).
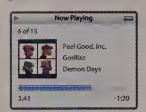
Hot Stuff

What we're raving about this month

Upgrade Kit for 5th Generation Video iPod

If you've got a fifth-generation (5G) iPod and you're tempted to upgrade, the iPod touch offers many advantages—but capacity is not one of them: the touch tops out at 32GB. Even the current 120GB iPod classic is only a 50 percent bump up from the old 80GB 5G model. If it's more space for media you're after, consider Apricorn's Upgrade Kit for 5th Generation Video iPod. For the same $249 you'd pay for a 120GB classic, you could trick out your existing 60GB or 80GB 5G iPod with a whopping 240GB of storage— Apricorn says that'll hold 60,000 songs, 50,000 photos, or 300 hours of video—and a brand-new, 850–milliamp-hour (mAh) LiIon battery. (A $159 kit for the 30GB 5G iPod has 120GB of storage and a 580-mAh battery.) The Upgrade Kit includes all the tools you need, as well as a CD with a step-by-step instructional video; Apricorn also offers free tech support (www.apricorn.com).—**DAN FRAKES**

Mini DisplayPort to HDMI Adapter

Apple's new MacBooks and Mac minis come with snazzy Mini DisplayPort connectors, but if you want to hook one up to your HDTV via its HDMI port, you're out of luck—Apple doesn't sell an adapter. However, Kanex's Mini DisplayPort to HDMI Adapter ($17) solves that problem, allowing me to display live streaming Wimbledon matches on my flat-screen TV, right from my MacBook Air. Even better is a new $40 version that also comes with a USB plug, so you can route Mac video and (analog) audio together over the same cable (www.kanexlive.com).—**JASON SNELL**

VLC 1.0

VLC is an all-purpose open-source media player program that plays pretty much any video or audio format known to humankind. More than eight years after the project began, it's finally hit 1.0, with a number of new features, such as frame-by-frame playback, a host of new decoders, and even support for AirTunes. The software is a free download, but you'll need at least QuickTime 7 and Mac OS X 10.5 or later (sadly, it no longer supports Tiger) to take advantage of its powers (www.videolan.org).—**DAN MOREN**

BTkey

Apple makes a full-size wired keyboard and compact versions of both its wired and wireless keyboards. But where's the full-size Bluetooth version? For users who wish Apple would complete its lineup, Macally's BTkey Wireless Bluetooth Keyboard for Mac is a suitable substitute (though it forgoes Apple's shiny aluminum appearance for an all-white exterior). The $70 BTkey offers a full complement of 108 keys, including a numeric keypad, Mac-specific modifier keys, 15 function keys, and dedicated volume and eject keys. The keyboard features low-profile scissor-style key caps to make typing easier on your fingers and runs off two AAA batteries for up to two months (www.macally.com).—**DAN FRAKES**

E-P1

The new E-P1 packs the power and flexibility of a digital SLR into a camera body the size of a point-and-shoot (check out our first look at macworld.com/5159). This 12.3-megapixel camera supports interchangeable lenses, shoots in Raw mode, and captures HD-quality video—and packages all these features in a cute retro design. To attain the smaller size, Olympus had to make sacrifices, such as ditching the optical viewfinder— instead, you'll have to use the 3-inch LCD to compose shots. (A separate lens comes with a clip-on viewfinder.) But the camera's SLR-quality sensor produces good low-light shots, and the camera comes loaded with useful features, including image stabilization and a digital leveler. Packages that include the body and a lens start at $800 (www.olympusamerica.com).—**KELLY TURNER**

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Sanyo Xacti VPC-CG10, Pure Digital Flip UltraHD, and Kodak Zi6

HD in Your Pocket

Which high-definition mini camcorder is for you? BY CHRISTOPHER BREEN

Up until a year or so ago, camcorders were fairly bulky things. That has changed. Thanks to the development of camcorders that store their recordings on flash media and operate on small batteries, manufacturers have been able to create cameras that can fit in a shirt pocket.

Now there are pocket camcorders that shoot in 720p (1,280 by 720 pixels) high definition. In the following pages, we will look at what defines a pocket HD camcorder and review the features of some of today's popular models—Creative Labs' Vado HD, Genius's G-Shot HD520, Kodak's Zi6 and Zx1, Pure Digital's Flip MinoHD and Flip UltraHD, Sanyo's Xacti VPC-CG10, and Sony's Webbie HD MHS-PM1.

(Disclaimer: I'm the author of *The Flip Mino Pocket Guide* [Peachpit Press, 2009], which covers tips and techniques on using the Flip Mino camcorder.)

Pondering the Pocket Camcorder

Full-size HD camcorders are bulky. A pocket camcorder slips with ease into a pocket (though that pocket may need to be a deep one) or purse.

Additionally, pocket HD camcorders cost less than full-size ones—between $150 and $230, versus $500 or more for their larger siblings—and they're very easy to operate. In most cases, you just switch on the camera and press the record button.

The image quality from pocket HD camcorders is decent under good lighting, but they don't perform all that well in surroundings that are blazingly bright or underlit. Because most of these cameras lack image stabilization, they can produce jittery video when held with shaking hands. And the digital zooms found on nearly all of them produce grainy images.

But quality isn't the only issue. The advantage of a pocket HD camcorder is its immediacy. Your precious memory may not be pristine, but at least you've captured *something*.

Common Features

While pocket camcorders have some features in common—a battery, a storage medium, an LCD screen, a way to connect the camera to a computer, and simple controls—they implement those features in different ways.

Form The truly pocketable camcorder looks similar to a candy bar–style mobile phone. The lens sits near the top of the camera and the LCD is on the back, usually above the minimal controls, typified by a single red record button, a play button, and a few additional buttons for zooming and navigating through captured clips. Somewhat larger camcorders that feature a pistol-grip design—such as the Xacti and G-Shot—offer flip-out LCDs. These cameras include a few more controls—menu buttons and a button for taking still pictures, for example.

Battery The Vado HD, G-Shot, Xacti, and Webbie use proprietary removable batteries that charge either when the camera is connected to a powered USB port or when it's inserted into a charging dock. Using a proprietary battery means that you can't simply stop by a convenience store and buy new batteries if you run out of power when you're out and about, so you should consider buying an extra battery ($20 to $30) when you buy the camcorder. The Flip MinoHD has a nonremovable battery that you charge over USB. The Flip

The Lamplight Challenge Shooting under lamplight presents problems for all pocket camcorders. Some, like the Flip UltraHD (left), handle it better than others, such as the Webbie (middle) and Zx1 (right).

UltraHD, Zi6, and Zx1 use AA batteries. (The Flip UltraHD can also use a bundled battery pack chargeable over USB.)

With a removable battery you can swap in a new battery when you need more juice. With a nonremovable battery, your camera is out of action while you charge it. If your camcorder runs off AA batteries, you can easily find replacements in a pinch.

Memory Some of these cameras use removable media, while others include built-in storage. The G-Shot, Zi6, Zx1, and Xacti camcorders use SD media and the Webbie employs Sony's own Memory Stick card. The Vado HD and both Flip camcorders use internal memory—the Flip MinoHD has 4GB of memory, whereas the Flip UltraHD and Vado HD each include 8GB of memory.

Removable media is helpful when you've filled the card but you don't have a computer nearby where you can offload your clips. All you need to do is swap cards. That said, the Flip UltraHD and Vado HD can hold up to two hours

of video in their 8GB of internal memory. That should be plenty.

LCD All pocket camcorders use an LCD for both viewing your subject while shooting and watching the videos you've shot. Screen sizes, measured diagonally, vary from tiny (the Flip MinoHD at 1.4 inches and the Webbie at 1.8) to midsize (the 2-inch displays on the Flip UltraHD, Vado HD, and Zx1) to fairly spacious (the Zi6 at 2.4 inches and the G-Shot at 2.5) to the Xacti's this-is-like-a-*real*-camcorder 3-inch flip-out LCD.

The LCDs on the G-Shot and Xacti camcorders offer the ability to easily take self-portraits, because you can rotate the LCD to center yourself in the frame. They also make it easier to shoot subjects when you need to hold the camera over your head. With the candy bar–style camcorders, you can't see the screen when the

lens is pointed at you or when you hold the camera over your head.

The Webbie addresses this problem in an interesting way. Instead of a moving LCD, it has a lens mounted on a rotating barrel at the top of the camera. To capture something over your head, hold the camera up and rotate the lens about 45 degrees. The camera body is angled so you

Quality isn't the only issue. The advantage of a pocket HD camcorder is its immediacy.

can see the display. It's a cute gimmick, but I didn't find it all that useful. It would be more helpful if the rotation had a click stop, instead of moving smoothly.

None of these cameras offers an optical viewfinder, so they need to have LCDs bright enough to remain visible in direct sunlight. Fortunately, they all do.

Shooting Modes Each of these cameras shoots 720p HD video; some can shoot other modes as well. The G-Shot shoots stills in addition to 720p and standard-

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Creative Labs Vado HD
♦♦♦½

PROS: Good amount of built-in storage capacity; wider-angle lens than the competition.

CONS: Movies can be very bright; blue or green cast to indoor shots; zoom stutters.

PRICE: $230

COMPANY: Creative Labs, us.creative.com

FULL REVIEW: macworld.com/4628

Genius G-Shot HD520
♦♦

PROS: Large flip-out LCD; three shooting modes; digital image stabilization.

CONS: Poor overall video quality; records only 22KHz mono audio; inelegant controls; zoom stutters.

PRICE: $149

COMPANY: Genius, www.geniusnet.com

FULL REVIEW: macworld.com/5058

Kodak Zi6
♦♦♦♦

PROS: Very good overall image quality; large LCD; three shooting modes; good sound.

CONS: Low-light results not great.

PRICE: $160

COMPANY: Kodak, www.kodak.com

FULL REVIEW: macworld.com/4074

Creative Labs Vado HD, Kodak Zx1, and Genius G-Shot HD520

definition (640 by 480) movies, and it's the one camera that can shoot at a low-quality 320 by 240 resolution. The Zi6 and Zx1 camcorders can shoot in three modes—720p at 30 fps, 720p at 60 fps, and standard definition (640 by 480) at 30 fps—and capture stills. The Xacti shoots 720p video at 30 fps and standard-definition video at either 30 or 60 fps. It too takes still shots—it can do this even when you're shooting video. And the Webbie shoots 1,080p at 30 fps, 720p at 30 fps, and standard-definition video as well as stills.

File Format These camcorders shoot video encoded in H.264 format. Also known as MPEG-4 Part 10, or MPEG-4 AVC (Advanced Video Coding), H.264 produces good results from low bit-rate captures. (The lower the bit rate, the smaller the file size and the poorer the video quality.)

Some of the files are wrapped in a file format that's not QuickTime-compatible. For example, the Vado HD and G-Shot camcorders produce H.264 movies wrapped as AVI files. QuickTime won't play these movies natively. You must install software such as the free Perian QuickTime component (perian.org), which lets your Mac read these files.

Data Rate These camcorders differ in their data rate—the amount of data captured in the resulting files. And that data rate is reflected in how the movies look (though it's not the only factor that influences their quality). The cameras that capture at data rates below 7 Mbps (megabits per second)—the Vado HD (around 4.3 Mbps), the G-Shot (around 6.3 Mbps), and the Webbie (around 4 Mbps)—produced video that lagged behind the rest of the pack in quality.

However, higher data rates don't guarantee better video. The Flip MinoHD has higher data rates (around 10.4 Mbps) than its sibling, the Flip UltraHD (around 9.1 Mbps), but the UltraHD's results are more pleasing.

Sound The Flip MinoHD and Vado HD capture 44.1kHz mono, while the G-Shot manages only 22kHz mono. The Flip UltraHD is the sole camcorder that captures 44.1kHz stereo. The rest use 48kHz stereo audio.

The built-in microphones on these cameras are fine for subjects within a couple of feet, but the sound on some of these devices gets very thin at a distance. Those that had the best sound (meaning good volume and fullness) were the Zi6, Flip UltraHD, and Webbie.

Computer Connection and Editing All of these camcorders connect to a Mac via USB. The Flip camcorders, the Zi6, and the Vado HD make this very easy, thanks to built-in flip-out USB connectors. The others include either mini- or micro-USB ports and cables. If a camcorder uses a removable memory card, you can plug the card into an external card reader.

Some of the cameras are bundled with Windows software for video editing. The exception is the Mac- and Windows-compatible FlipShare software included on every Flip camcorder. Though basic, it allows you to easily move clips from the cameras, trim them, create simple titles, export the finished product, and upload movies to MySpace and YouTube.

Kodak Zx1

🔵🔵½

PROS: Good color reproduction; three shooting modes.

CONS: Outdoor shots have blue cast; yellow cast in video shot with typical indoor lighting; poor video quality in lamplight; zoom stutters.

PRICE: $150

COMPANY: Kodak, www.kodak.com

FULL REVIEW: macworld.com/5059

Pure Digital Flip MinoHD

🔵🔵🔵½

PROS: Decent low-light shooting; free custom case service available.

CONS: Small LCD; yellow cast in video shot with typical indoor lighting; digital zoom produces soft images; doesn't shoot stills; composite-only TV connection.

PRICE: $230

COMPANY: Pure Digital, www.theflip.com

FULL REVIEW: macworld.com/4222

Pure Digital Flip UltraHD

🔵🔵🔵🔵½ **OUR PICK**
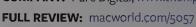
PROS: Great video quality; good amount of built-in storage capacity; flexible battery options; good sound.

CONS: Doesn't shoot stills.

PRICE: $200

COMPANY: Pure Digital, www.theflip.com

FULL REVIEW: macworld.com/5057

The software is permanently planted on each Flip camcorder.

The lack of editing software isn't a problem; you can import recorded videos into iPhoto. You can then import them into iMovie for editing. Again, you need something like the Perian QuickTime component to read and edit movies from the Vado HD and the G-Shot.

AV Connection Given that these are all HD camcorders, you'd think they'd all allow you to send out HD video when attached to an HDTV via HDMI. Not so. The Flip MinoHD and Xacti output composite video only. If you want HD, you have to export the video from the camera and put it on a medium or device that can play it on your TV (a DVD or

Mac attached to the set, for example). The Zi6 and Webbie support both composite and component video output. The Vado HD, G-Shot, and Flip UltraHD include jacks for connecting to an HDTV via an HDMI cable. The Zx1 supports HDMI and composite outputs.

What's Missing

If pocket camcorders provided all the bells and whistles of a full-size camcorder, the larger camcorders wouldn't have a reason to exist. Compactness usually requires these compromises.

Image Stabilization A feature that's built into a camcorder to compensate for camera shake—image stabilization—is absent in nearly all of these

Hold Still!

Nearly every pocket camcorder lacks image stabilization. You can do a few things to stabilize a jumpy camcorder.

Hand-Holding It's tempting to hold a camcorder in front of you at nearly arm's length. As an experiment, pick up any object, hold it in this position, and watch your hands. How steady are they? Right, not very. Shoot with your elbows tucked into your side, rather than extended in front of you. Additionally, holding a camera in this position makes it more likely you'll move the camera smoothly by turning your entire body.

Three-Legged Shooting Each of the camcorders has a tripod mount. Put that mount to good use with a tabletop tripod. You'll find these inexpensive, pocketable tripods in any camera store and online; they generally cost less than $30. Joby's Gorillapod ($22 to $100; www.joby.com) tripods have legs made of connected balls. These connections bend as well as rotate, allowing you to not only create a perfect shape for your tripod, but also bend the legs to wrap it around things—the pole supporting a parking meter, your car's rear-view mirror, or the top of your computer's monitor.

The Rubber-Band Tripod Rig a tripod for a pocket camcorder with nothing more than a vertical object and a large rubber band. Strap the device to a street sign, microphone stand, or broom handle. The latter technique is helpful for maneuvering your camera above a crowd, behind a misbehaving machine, or into an attic full of zombies without exposing the more vulnerable (and delicious) parts of your head.

Skin Tone Shades Skin tones differ with each camcorder. The Flip UltraHD (top row, left) renders them a little blue, the Zi6 (top row, right) makes them a little yellow, the Vado HD (bottom row, left) creates a very blue cast, and the Xacti's skin tones (bottom row, right) are oversaturated.

Sanyo Xacti VPC-CG10

🕴🕴🕴🕴

PROS: Very good overall video quality; flip-out LCD; largest LCD in this group; digital image stabilization; 5× electronic optical zoom; enhanced shooting modes.

CONS: Video tends to be oversaturated; composite-only TV connection.

PRICE: $200

COMPANY: Sanyo, www.sanyo.com

FULL REVIEW: macworld.com/5061

Sony Webbie HD MHS-PM1

🕴🕴

PROS: Offers 1,080p video resolution; three shooting modes; good sound.

CONS: Poor video quality; zoom stutters.

PRICE: $150

COMPANY: Sony, www.sonystyle.com

FULL REVIEW: macworld.com/5060

cameras. The exceptions are the G-Shot and the Xacti, which have digital image stabilization.

Optical Zoom Most of these cameras offer digital zoom only (usually 2×). The exceptions are the Xacti, which includes a 5× optical zoom, and the Webbie, which has a 4× optical zoom.

Digital zoom magnifies pixels to give the illusion that you're closer to your subject. This makes the resulting video grainy and soft. You'll get better results by moving closer to your subject.

It's bad enough that you're stuck with digital zoom, but it's worse when that zoom stutters. Unfortunately, that's the case with the Vado HD, G-Shot, Zx1, and Webbie. The Zi6 and both Flip camcorders zoom smoothly, and the Xacti offers the best zoom of the bunch.

External Microphone Port The quality and range of each camera's built-in microphone is important because none of these cameras includes a port for connecting an external microphone.

Enhanced Shooting Modes In most cases, these are truly point-and-shoot camcorders, offering no means of controlling exposure, white balance, or ISO. The exception is the Xacti, which allows you to adjust exposure, white balance, ISO, and focus settings. It also includes a variety of scene selections—Sports, Portrait, and Lamp, for example—and lets you choose from a variety of still resolutions, from 640 by 480 on up to 4,000 by 3,000. And it has a macro still mode. This versatility is nice to have, but it does mean you may need to dash to a menu to adjust the camera, which defeats the purpose of a pocket camcorder—to offer a quick and easy way to shoot video.

A Grip on the Interface
Most of the candy bar–style pocket camcorders feature the "Obvious Red Button" control. On the back of the camera is a red button that initiates recording when pushed. Press it again to stop recording. To play back video you've shot, press a play button. These cameras also

have a button with a trash-can icon—the one to push when you wish to delete a clip.

Nearly all of these cameras offer a four-position switch or four buttons arrayed around the record button. To zoom in and out, push the switch or the buttons up and down while recording. To adjust volume, push the same controls up and down while playing clips. On the Flip camcorders and the Vado HD, the left and right switches do nothing while you're recording. When you're playing video, they let you move between recorded clips. On the Zi6 and Zx1 camcorders, you use the left and right positions of the joystick (Zi6) or buttons (Zx1) to select shooting modes. During playback, they work similarly to those on the other cameras, moving you through clips.

All the candy bar–style cameras except for the Flip MinoHD use buttons or switches you have to physically push. The touch-sensitive buttons on the back of the Flip MinoHD (save the record one) activate too easily if you're not careful about where you place your thumb.

Pocket HD Camcorders Compared

	Creative Labs Vado HD	Genius G-Shot HD520	Kodak Zi6	Kodak Zx1	Pure Digital Flip MinoHD	OUR PICK Pure Digital Flip UltraHD	Sanyo Xacti VPC-CG10	Sony Webbie HD MHS-PM1
RATING	♦♦♦½	♦♦	♦♦♦♦	♦♦½	♦♦♦½	♦♦♦♦½	♦♦♦♦	♦♦
PRICE	$230	$149	$160	$150	$230	$200	$200	$150
VIDEO-CAPTURE RESOLUTIONS	720p (30 fps)	720p (30 fps), 640×480 (30 fps), 320×240 (30 fps)	720p (30 fps), 720p (60 fps), 640×480 (30 fps)	720p (30 fps), 720p (60 fps), 640×480 (30 fps)	720p (30 fps)	720p (30 fps)	720p (30 fps), 640×480 (30 fps), 640×480 (60 fps)	720p (30 fps), 1,080p (30 fps), 640×480 (30 fps)
APPROXIMATE DATA RATE (IN MEGABITS PER SECOND)	4.3	6.3	8.8	11.3	10.4	9.1	9.3	4.0
PHOTO STILLS	○	●	●	●	○	○	●	●
DIGITAL ZOOM	2×	5×	2×	2×	2×	2×	5×ᴬ	4×ᴬ
LCD SIZE (IN INCHES)	2.0	2.5	2.4	2.0	1.4	2.0	3.0	1.8
STORAGE	8GB built-in	SD card (32MB built-in)	SD card (128MB built-in)	SD card (128MB built-in)	4GB built-in	8GB built-in	SD card (40MB built-in)	Memory Stick
FILE FORMAT	H.264 (44.1kHz mono)	H.264 (22kHz mono)	H.264 (48kHz stereo)	H.264 (48kHz stereo)	H.264 (44.1kHz mono)	H.264 (44.1kHz stereo)	H.264 (48kHz stereo)	H.264 (48kHz stereo)
TV INTERFACE	HDMI	HDMI	component, composite	HDMI, composite	composite	HDMI	composite	component, composite
BATTERY	removable lithium ion	removable lithium ion	2 AA	2 AA	fixed lithium ion	2 AAᴮ	removable lithium ion	removable lithium ion
DIMENSIONS (H X W X D, IN INCHES)	3.9×2.2×0.6	4.4×2.9×1.2	4.5×2.5×0.9	4.2×2.0×0.8	3.9×2.0×0.6	4.3×2.2×1.2	4.4×2.8×1.5	4.0×2.2×0.9
WEIGHT (IN OUNCES)	3.5	5.6	4.1	3.5	3.3	6.0	6.8	4.2
WARRANTY	1 year	1 year	1 year	1 year	90 days	90 days	90 days for labor; 1 year for parts	90 days for labor; 1 year for parts

● = yes. ○ = no. ᴬ Optical zoom. ᴮ Also comes with a battery pack that's chargeable over USB.

The Webbie offers a different sort of interface, with a movie button and a photo button. Below those is a joystick button that allows you to navigate clips and pictures and adjust volume. A separate zoom toggle sits between the photo and movie buttons.

I prefer the buttons to a joystick because you can be very exacting about which button you push—it's too easy to push a controller in the wrong direction.

If you've used a traditional camcorder with a flip-out screen, you'll feel at home with the Xacti. Video and photo buttons appear on the back of the camera, with a zoom switch between the two. A play button sits below the video button, a set joystick button next to it, and a menu button below those items. To configure the camera's functions, you use the menu button and simply march through menus displayed on the LCD.

The G-Shot camera's interface, however, lacks genius. To shoot video, you press a record trigger on the front of the camera—easy enough. But to zoom, you have to move a switch on the right side of the camera, which is clumsy. The Flash button and the Landscape/Macro toggle aren't as vital to impromptu shooting as zoom is, but their locations on the camcorder still seem oddly awkward. The LCD-based menu system, which you access by pressing a menu button, is reasonably easy to navigate, but its commands aren't intuitive.

in a sunlit room, and inside at night under lamplight, and I checked skin tones by filming a human subject.

Disappointingly, the Webbie and G-Shot were consistently poor performers in our video tests. The Webbie's video was lifeless—colors were washed out and indoor skin tones had a sickly green hue. The G-Shot produced very nice indoor skin tones and good detail, but outdoors under bright sunlight the

Digital zoom magnifies pixels to give the illusion that you're closer to your subject.
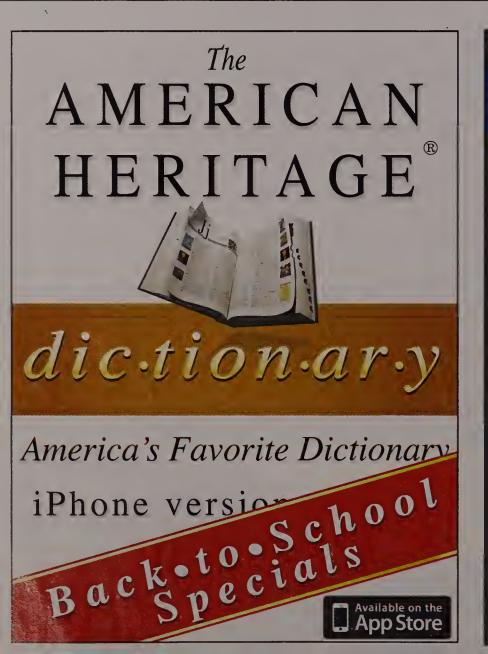
Picture Show

It's important to understand that every one of these camcorders is a study in compromise. They all have small, inexpensive lenses and tiny sensors (the electronic elements that capture images). None of them performs perfectly.

To find out how they compared, I shot video outside in bright sunlight, inside

videos had too much contrast, with blown-out whites and murky shadows. The G-Shot's clips were jaggy.

In the middle of the pack were the Zx1, Vado HD, and Flip MinoHD. Overall, the Zx1 has a too-blue tone outdoors and a too-yellow tone indoors, and in lamplight its images look terrible. Also, the Zx1's video doesn't present a lot of detail. The

Vado HD's video is too bright under all conditions, and its indoor skin tones are very blue. The Flip MinoHD has decent outdoor video under good light, but it creates a yellow cast when shooting indoors under lamplight.

The better-performing cameras were the Zi6, Flip UltraHD, and Xacti. Of these, the Xacti is clearly the most versatile, but its video is oversaturated under all conditions, and its auto settings produce indoor video that's a little dark. You can deal with some of these issues by playing with the camera's ISO, white balance, and scene settings, but doing so means fiddling with the camcorder every time you shoot. The Zi6 produces decent color in all but extreme lighting conditions, but its video doesn't have the level of detail and the depth of field you get from the Flip UltraHD. The Flip UltraHD performs well in most lighting conditions, though indoor shots had a slightly blue cast. It does the best of this group in low light.

Sony Webbie HD MHS-PM1 and Pure Digital Flip MinoHD

Macworld's Buying Advice
Overall, Pure Digital's Flip UltraHD is our pick. With its 8GB of storage (which holds about two hours of HD video), ease of use, nice LCD, reasonably balanced color, decent microphone, and ability to capture watchable video in almost all lighting conditions, it's a great choice for a pint-size camcorder. ✕

Senior Editor **Christopher Breen** is the author of *The Flip Mino Pocket Guide* (Peachpit Press, 2009).

macworld.com/reviews

What we're reviewing online this month

Firefox 3.5 △

RATING: ●●●● **PRICE:** free **COMPANY:** Mozilla
URL: www.mozilla.com

After the great leap forward in speed, design, and overall polish that Mozilla's Firefox Web browser enjoyed in version 3.0, it's understandable that version 3.5 is a more modest advancement. While it doesn't stand out dramatically from its predecessor, the new version does bring Firefox closer to the cutting edge of Web standards, and it offers a handful of clever innovations in privacy that its rivals would do well to adopt. While the browser's much-ballyhooed claims of a big speed boost aren't all they're cracked up to be, Firefox has evolved into a beautiful, polished program that's a pleasure to use (macworld.com/5165).

Harry Potter and the Half-Blood Prince △

RATING: ●●●½ **PRICE:** $30 **COMPANY:** Electronic Arts **URL:** www.ea.com

Harry Potter and the Half-Blood Prince is the latest in the series of adventure games based on the Harry Potter books
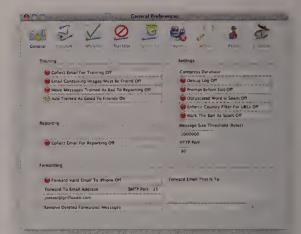
by J.K. Rowling and their movie equivalents. Unfortunately, young Mr. Potter's games fail to capture the magic and wonder of their source material. Harry Potter and the Half-Blood Prince continues the adventures of the main character, a wizard in his sixth year at Hogwarts School of Witchcraft and Wizardry. This time, he must uncover an insidious plot hatched by his rival, Draco Malfoy, while at the same time leading his Quidditch team, confronting villainous Death Eaters, and dealing with being an angst-ridden teenager. It's a shame that the game designers spent so much time minutely re-creating Hogwarts from the movies that they forgot to program things for players to do. Still, the world is pretty stunning and the duels include a fun—if simple—combat system (macworld.com/5160).

Mavis Beacon Teaches Typing 2009 Deluxe Edition △

RATING: ●●●●½ **PRICE:** $40 **COMPANY:** Software MacKiev **URL:** www.mackiev.com

At its core, Mavis Beacon is the same as any other typing tutor: see key on screen, type key on keyboard, lather, rinse, and repeat. Sooner or later, after repeating that cycle a few hundred times or so, you should theoretically be able to type. Mavis Beacon performs admirably in that regard. There are multiple lessons, each focusing on a different set of keys, starting with the home row and branching out from there. Excerpts from literature and scholarly works enhance the lessons (macworld.com/5164).

Purify 2.1 △

RATING: ●●● **PRICE:** $30 **COMPANY:** Hendrickson Software Components **URL:** www.hendricom.com

Hendrickson Software Components' Purify 2.1.8 is a unique application—it's neither an in-app spam filter nor a stand-alone spam filter. Rather, Purify is a so-called pass-through spam filter that scans and categorizes your e-mail messages as they arrive—it doesn't actually trap or block spam, but codes it so that you can then handle it as you like with your e-mail client of choice. By acting as a pass-through, Purify avoids timing issues and filters all e-mail. Setup, however, is complicated, and getting the most out of the program requires knowledge of regular expressions that not all users will have. Users also have to set up their own spam-processing rules in the e-mail client, which is not something everyone will want to do. If you have a technical background and want the flexibility that comes from a pass-through spam program with a lot of customizable features, Purify is a good option (macworld.com/5162).

Find It Online

For expanded reviews, type the blue URL at the end of each summary into your browser's address bar.

Final Cut Studio

RATING: Final Cut Pro 7, ♦♦♦♦; Motion 4, ♦♦♦♦½; Color 1.5, ♦♦♦½;
Soundtrack Pro 3, ♦♦♦♦; Compressor 3.5, ♦♦♦♦½ **PRICE:** $999; upgrade,
$299 **COMPANY:** Apple **URL:** www.apple.com

To achieve **Final Cut Pro 7**, Apple started with an already excellent
market-leading tool and made significant improvements that will
benefit editors doing realistic day-to-day tasks and enable them to
get work done even better and faster. The background processing,
Easy Export, and new ProRes codecs alone
make this a worthwhile upgrade for the
reduced suite price of $999. **Motion**, the
motion graphics component, is even more
powerful in version 4. If you have a fast new
machine with a high-powered graphics card,
you can get complex work done quickly and
preview it as you go. Motion is now a serious
rival to Adobe After Effects in terms of speed
and the ease with which users can set up
complex animations. **Color 1.5** (like the
previous version of the program) has a very
non-Mac-like look-and-feel, with a very
specific goal and skill set. The program's
hardware requirements are still high for

optimal performance. But client-built timelines are now less likely to
need meticulous, microscopic analysis and testing to make sure
they'll round-trip correctly. **Soundtrack Pro 3**, from a videogra-
pher's standpoint, is a worthy upgrade. A large number of signifi-
cantly more efficient features, such as easy voice-level match and
precise and varied time-stretch options, help you get your work
done faster. **Compressor** is more powerful and easier to use, and it
does more. The new Share feature, improved Droplets, batch
templates, disc burning (including support for Blu-ray), and more
make Compressor 3.5 a winner (macworld.com/5171).

Microsoft Explorer Mouse △

RATING: ●●●● **PRICE:** $80 **COMPANY:** Microsoft
URL: www.microsoft.com

They might seem old-fashioned, but trackball mice have one thing going for them: all they require to work is a solid surface. When you need high-precision tracking and speed, optical and laser mice are king—but such mice have problems with or don't work on reflective, glossy, and transparent surfaces. The Explorer Mouse uses Microsoft's BlueTrack technology, which attempts to solve some of the tracking problems encountered with optical and laser mice. The Explorer Mouse has specialized lenses and a blue LED (hence the BlueTrack moniker) that help it achieve better accuracy on a wider variety of surfaces. The Explorer Mouse is a solid device that feels great and performs well (macworld.com/5168).

Sony Cyber-shot DSC-S980

RATING: ●●½ **PRICE:** $150 **COMPANY:** Sony
URL: www.sonystyle.com

What's not to love about a $150 digital camera? The Sony Cyber-shot DSC-S980 is a bare-bones but well-designed pocket camera that offers some nice-looking specs for the price: a 12-megapixel sensor, a 4× optical zoom lens ranging from 33mm to 132mm, digital image stabilization, red-eye reduction, face detection, a 2.7-inch LCD screen, and ISO equivalencies up to 3200. Unfortunately, in the all-important image quality arena, this camera came up short. Our sample images were noticeably darker and, with the flash, less evenly lit than prints from comparable cameras. That is why we can't wholeheartedly recommend the DSC-S980 (macworld.com/5169).

Western Digital My Book Mac Edition 1TB

RATING: ●●●● **PRICE:** $150 **COMPANY:** Western Digital **URL:** www.westerndigital.com

Generally, large-capacity drives are for users with massive storage needs who require extra space to fit music, videos, and other large media files. Moving this much data to a hard drive takes time, and that's where USB-only devices like the Western Digital My Book Mac Edition 1TB really come up short. FireWire 800 can transfer files many times faster than USB. That said, Western Digital continues to produce high-quality drives designed for the Mac, and many users know and trust the brand (macworld.com/5167).

App Guide

iPhone and iPod touch software that's caught our eye

GAMES
Real Racing 1.10

RATING: ●●●● **PRICE:** $10 **COMPANY:** Firemint
URL: macworld.com/5095

Real Racing—a racing game that has some of the most beautiful graphics we've seen on the iPhone—is more than just visually stunning; it's also great fun to play. The controls take some getting used to, but the game's design offers more-realistic racing and is more rewarding for dedicated players than most games of its ilk (macworld.com/5096).—CHRIS HOLT
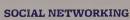
GRAPHICS
Brushes 1.1

RATING: ●●●●½ **PRICE:** $5
COMPANY: Steve Sprang
URL: macworld.com/5107

When inspiration for an illustration hits, all you need is an iPhone or iPod touch, a copy of Brushes, and your finger. Steve Sprang's app packs a number of tools, brush sizes, and colors into an elegantly designed package that lets you sketch or paint anywhere, anytime (macworld.com/5108).—TIM MERCER

SOCIAL NETWORKING
Tweetie 1.3.2

RATING: ●●●●½ **PRICE:** $3 **COMPANY:** atebits
URL: macworld.com/5105

Tweetie is about as close to an ideal Twitter client as it gets for the iPhone and iPod touch. The social-networking app offers smooth scrolling, great handling of links within tweets, and best-in-class support for multiple Twitter accounts. Twitterrific (●●●●; macworld.com/5024) rivals Tweetie for overall elegance, but Tweetie edges it out with a smidge more of an intuitive interface (macworld.com/5106).—LEX FRIEDMAN

GAMES
Resident Evil: Degeneration 1.03

RATING: ●●●●½ **PRICE:** $7 **COMPANY:** Capcom
URL: macworld.com/5099

Resident Evil is king of the horror survival genre. And now, the zombie-blasting franchise makes a near-flawless debut on the iPhone, thanks to efficient controls. For instance, there's a cross-hair icon you tap to pull out your gun; it doubles as a fire button. Buttons appear only when you need them, which keeps your screen uncluttered. The graphics are impressive—at times, it's hard to believe you're playing Resident Evil on a mobile device and not a dedicated gaming console (macworld.com/5100).—TIM MERCER
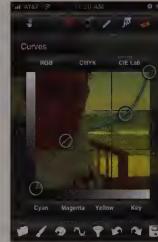
PHOTOGRAPHY
PhotoForge 1.6

RATING: ●●●●½ **PRICE:** $3 **COMPANY:** GhostBird Software **URL:** macworld.com/5101

There's no version of Photoshop for the iPhone, but Photo-Forge might be the next best thing. It offers a wide collection of image-editing tools and filters for improving photos or creating illustrations from scratch. This editing power comes in an elegant interface that makes it easy to find your way through the many tools (macworld.com/5102).—TIM MERCER

App Guide
Get more reviews, including reader reviews, as well as listings for every iPhone app at AppGuide.com.

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PRINTERS
Multifunction

PRODUCT	RATING	PRICE	TYPE	FIND CODE
Pixma MX850 (pictured) www.canon.com	♦♦♦♦½	$161	ink-jet	**3593**
Photosmart C7280 www.hp.com	♦♦♦♦	$236	ink-jet	**3581**
Color Laserjet CM1312nfi www.hp.com	♦♦♦♦	$380	laser	**5183**

HARD DRIVES
Desktop and Portable

PRODUCT	RATING	PRICE	TYPE	FIND CODE
Mercury On-the-Go (pictured) www.macsales.com	♦♦♦♦½	$168	portable	**4258**
Thunder Pro A/V Quad 1TB www.ezq.com	♦♦♦♦	$259	desktop	**5181**
Professional Quad Interface Hard Drive www.verbatim.com	♦♦♦♦	$160	desktop	**4963**

SCANNERS
Document and Flatbed

PRODUCT	RATING	PRICE	TYPE	FIND CODE
ScanSnap S510M (pictured) www.fujitsu.com	♦♦♦♦½	$386	document	**3321**
Perfection V300 Photo www.epson.com	♦♦♦♦	$98	flatbed	**4071**

DIGITAL CAMERAS
Point-and-Shoot

PRODUCT	RATING	PRICE	TYPE	FIND CODE
EX-z250 (pictured) www.casio.com	♦♦♦♦	$165	9.1-megapixel	**4256**
PowerShot SD880 IS www.canon.com	♦♦♦♦	$289	10-megapixel	**4257**

CAMCORDERS
High Definition

PRODUCT	RATING	PRICE	TYPE	FIND CODE
Flip UltraHD (pictured) www.theflip.com	♦♦♦♦½	$200	mini camcorder	**5057**
Vixia HG21 www.canon.com	♦♦♦♦	$1,299	120GB HD	**5182**

Laser Printer: LEXMARK C544DN

RATING: ♦♦♦♦½ **PRICE:** $499 **COMPANY:** Lexmark **URL:** www.lexmark.com **FIND CODE:** 4356

Why We Like It:

The Lexmark C544dn is a compact color laser printer that offers a wealth of features, including an easy-to-use cartridge-replacement system, paper-saving automatic duplexing, emulated Post-Script 3 and PCL 6 (Printer Command Language 6), and the ability to connect via 10/100 BaseT Ethernet or USB 2.0. Aimed at small to midsize businesses, this $499 (list) printer also produces high-quality color images that can spruce up presentations, graphs, and brochures.

Laser Printer Shopping Guide

- Duplexing technology allows printers to print on both sides of the page simultaneously. This is a practical feature for users who want to maximize speed and efficiency.

- Speed and text quality are key factors to consider for a laser printer. A high-quality laser printer typically prints 10 pages in around 30 to 45 seconds and gets at least a Very Good rating in our text-quality jury test.

- Most high-quality laser printers cost $300 to $600 and come with longer warranties than typical ink-jet printers. They are also usually on the heavy side (around 50 pounds).

ALSO CONSIDER: Oki Data C6150dn; ♦♦♦♦½; $785; macworld.com/3899 | **Brother HL-4070CDW;** ♦♦♦♦½; $380; macworld.com/3385

TOP PRODUCTS are those we've recently reviewed in a comparison of like products. As new products become available, we'll update this list. For longer reviews of these products and for other product recommendations, go to macworld.com/reviews. All prices are the best current prices taken from a PriceGrabber survey of retailers as of August 4, 2009. **FIND CODES:** In a browser's address field, typing in a find code after macworld.com/quickly takes you to a product's review or overview. For example, you can find our review of the C544dn at macworld.com/4356.

MONITORS
Widescreen

PRODUCT	RATING	PRICE	TYPE	FIND CODE
324 LCD (pictured) www.lacie.com	♦♦♦♦½	$830	24-inch display	3896
LP3065 www.hp.com	♦♦♦♦	$1,133	30-inch display	2509
MultiSync 3090WQXI www.necdisplay.com	♦♦♦♦½	$2,174	30-inch display	3770

DVD BURNERS
Desktop and Portable

PRODUCT	RATING	PRICE	TYPE	FIND CODE
Portable DVD±RW w/ LightScribe (pictured) www.lacie.com	♦♦♦♦	$76	portable	3878
d2 DVD±RW w/ LightScribe www.lacie.com	♦♦♦♦	$120	desktop	3900

DIGITAL CAMERAS
SLR

PRODUCT	RATING	PRICE	TYPE	FIND CODE
D90 (pictured) www.nikon.com	♦♦♦♦	$1,129	12.3-megapixel	4966
EOS Rebel Xsi www.canon.com	♦♦♦♦½	$620	12-megapixel	3898
Olympus E-30 www.olympusamerica.com	♦♦♦♦½	$1,049	12.3-megapixel	4453

PRINTERS
Ink-Jet

PRODUCT	RATING	PRICE	TYPE	FIND CODE
PictureMate Zoom PM 290 (pictured) www.epson.com	♦♦♦♦½	$227	compact; photo	3102
Deskjet D2545 www.hp.com	♦♦♦½	$66	inexpensive; general purpose	4067
Stylus Photo R1900 www.epson.com	♦♦♦♦½	$514	professional photo quality	3649

APPLE Macs

PRODUCT	SPECS	RATING	PRICE	DISPLAY	SPEED-MARKS	FIND CODE
DESKTOP						
iMac	Intel Core 2 Duo/2.66GHz	♦♦♦½	$1,199	20 inches	256	4482
	Intel Core 2 Duo/2.66GHz	♦♦♦♦	$1,499	24 inches	270	4483
	Intel Core 2 Duo/2.93GHz	♦♦♦♦	$1,799	24 inches	297	4484
	Intel Core 2 Duo/3.06GHz	♦♦♦♦	$2,199	24 inches	308	4485
Mac mini	Intel Core 2 Duo/2GHz (120GB hard drive)	♦♦♦♦	$599	not included	189	4486
	Intel Core 2 Duo/2GHz (320GB hard drive)	♦♦♦½	$799	not included	202	4487
Mac Pro	Intel Xeon/quad-core 2.66GHz	♦♦♦♦½	$2,499	not included	348	4488
	Intel Xeon/two quad-core 2.26GHz	♦♦♦♦	$3,299	not included	343	4503
PORTABLE						
MacBook	Intel Core 2 Duo/2.13GHz (white)	♦♦♦♦½	$999	13 inches	198	4946
MacBook Air	Intel Core 2 Duo/1.86GHz	♦♦♦½	$1,499	13 inches	156	4953
	Intel Core 2 Duo/2.13GHz	♦♦♦½	$1,799	13 inches	175	4954
MacBook Pro	Intel Core 2 Duo/2.26GHz	♦♦♦♦½	$1,199	13 inches	213	4947
	Intel Core 2 Duo/2.53GHz	♦♦♦♦½	$1,499	13 inches	239	4948
	Intel Core 2 Duo/2.53GHz	♦♦♦♦	$1,699	15 inches	237	4949
	Intel Core 2 Duo/2.66GHz	♦♦♦♦	$1,999	15 inches	242	4950
	Intel Core 2 Duo/2.8GHz	♦♦♦♦	$2,299	15 inches	260	4951
	Intel Core 2 Duo/2.8GHz	♦♦♦♦	$2,499	17 inches	256	4952
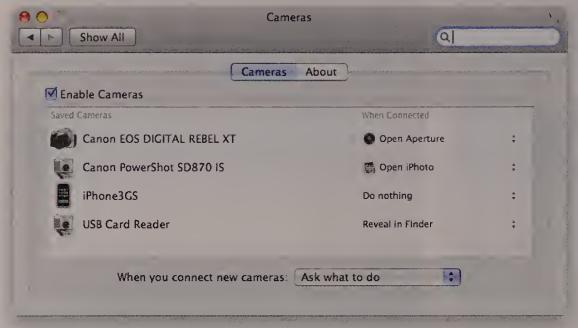
APPLE iPods and iPhones

PRODUCT	SPECS	RATING	PRICE	DISPLAY	PERFORMANCE	FIND CODE
iPODS						
iPod classic	120GB	♦♦♦♦	$249	2.5-inch color	36 hours of music playback; 6 hours of video playback	3863
iPod touch	8GB	♦♦♦♦	$229	3.5-inch color	36 hours of music playback; 6 hours of video playback	3864
	16GB	♦♦♦♦	$299	3.5-inch color	36 hours of music playback; 6 hours of video playback	3865
	32GB	♦♦♦♦	$399	3.5-inch color	36 hours of music playback; 6 hours of video playback	3866
iPod nano	8GB	♦♦♦♦½	$149	2-inch color	24 hours of music playback; 4 hours of video playback	3867
	16GB	♦♦♦♦½	$199	2-inch color	24 hours of music playback; 4 hours of video playback	3868
iPod shuffle	4GB	♦♦♦	$79	none	10 hours of music playback	4491
iPHONES						
iPhone 3G and 3GS	8GB (3G)	♦♦♦♦	$99	3.5-inch color	5 hours of 3G Internet; 5 hours of 3G talk time	4184
	16GB (3GS)	♦♦♦♦½	$199	3.5-inch color	9 hours of 3G Internet; 5 hours of 3G talk time	4955
	32GB (3GS)	♦♦♦♦½	$299	3.5-inch color	9 hours of 3G Internet; 5 hours of 3G talk time	4956

Speedmark 5 is Macworld Lab's standard test tool for benchmarking systems running Mac OS X 10.5 (Leopard). For more information on Speedmark testing, go to www.macworld.com/speedmark.

Mac Gems

Get more and expanded reviews at macworld.com/macgems **BY DAN FRAKES**

Camera-Connect Automation Cameras lets you choose different actions to perform when you connect each photo device to your Mac.

PHOTOGRAPHY

Cameras 1.0.1

RATING: ♦♦♦♦½ **PRICE:** free **COMPANY:** Flexibits
URL: www.flexibits.com

Mac OS X can automatically open iPhoto, Aperture, or another program whenever you connect your digital camera or media card to your Mac, but not everyone likes this behavior. If you'd prefer to handle each device differently, Flexibits' Cameras is the app for you. Once it's installed, whenever you connect a new digital camera, iPhone, memory-card reader, or other photo device, Cameras asks you to choose an action for that particular device: Do Nothing, Open iPhoto, Open Image Capture, Open Other Application,

and so on. You can set it up so that iPhoto launches when you connect your point-and-shoot camera but Aperture launches when you plug in your DSLR or memory cards.

While many of the available actions are similar to those you'll find in the stock OS X dialog box, there are also two additional choices. The first is Reveal In Finder, which works only with memory cards; it opens a new Finder window displaying the contents of your media card. The second option is Automatically Download, which downloads the contents of your device to a folder of your choosing. This feature worked perfectly in my testing; I only wish that Cameras would automatically unmount the device after the download finishes.

Cameras is one of those elegant utilities that makes you wonder, "Why doesn't Mac OS X work this way?" (If the rumors are correct, it will, come Snow Leopard.)

Go to Weblog
Read Mac Gems online (macworld.com/macgems) for longer reviews of these and other products.

BACKUP

BackupLoupe 1.4
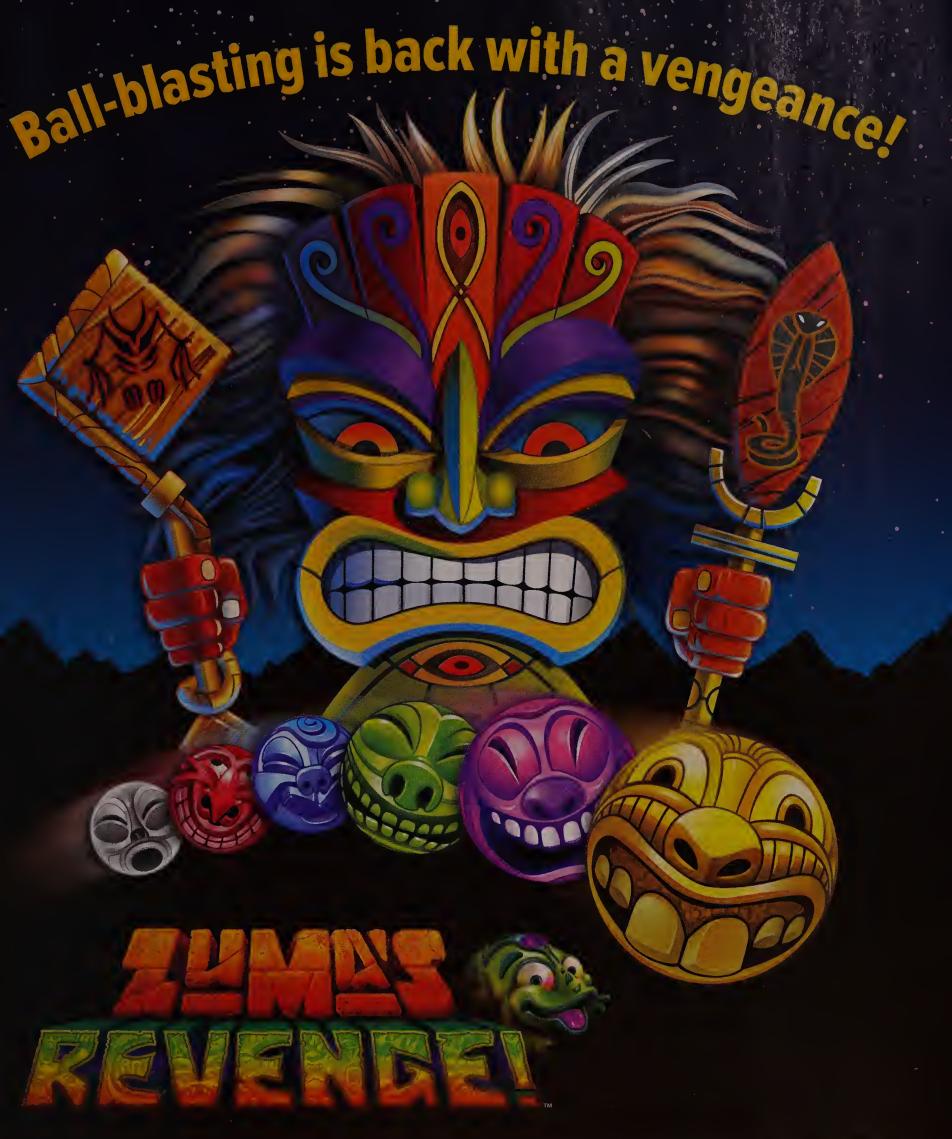
RATING: ♦♦♦½ **PRICE:** $2 **COMPANY:** soma-zone
URL: soma-zone.com

Mac OS X's Time Machine backup feature automatically backs up multiple versions of important data on your Mac. But a regular complaint we hear from readers is that their Time Capsule or other hard drive has filled up and they can't figure out why. BackupLoupe can help you find the answer.

When you launch BackupLoupe, you see a list of your Time Machine backup volumes; for each volume, you see a list of every backup instance for every computer backed up to that disk, as well as the total amount of backed-up data for each computer. Click on a backup, and BackupLoupe provides a hierarchical, column-view display of just the files Time Machine backed up for that instance. BackupLoupe is like WhatSize (♦♦♦♦; macworld.com/4318) for Time Machine. It even supports Quick Look, so you can get a useful preview of a file by simply pressing the spacebar.

Using BackupLoupe's browser, you can determine whether the backup includes large items that you don't care about; if so, you can drag those items from the Finder into the Do Not Back Up list in Time Machine's preferences. And if you find large unwanted backups, you can delete them from within Time Machine.

Unfortunately, there's no way to delete backups from within BackupLoupe, nor can you drag an item directly from its browser; you have to browse to the item manually in the Finder. Even something as basic as a Reveal In Finder command would be helpful here. On the other hand, BackupLoupe lets you exclude a particular file from future Time Machine backups by selecting it in the browser and then clicking on the plus-sign (+) button in the
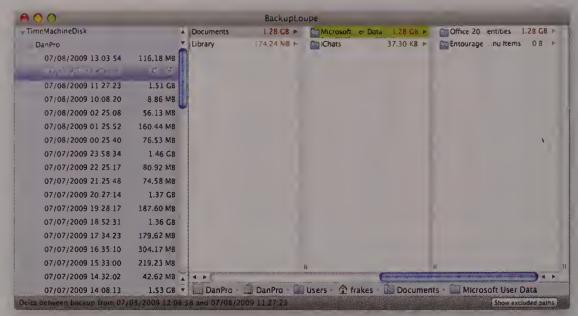
Backup Browser BackupLoupe shows you exactly which files Time Machine has backed up so you can see what's taking up space on your backup drive.

Excluded Paths drawer. BackupLoupe is a nifty tool that makes it easy to fine-tune your Time Machine backups.

PRODUCTIVITY

iDeskCal 2.0.2.1

RATING: ●●●½ **PRICE:** $13 **COMPANY:** HashBang Industries **URL:** www.hashbangind.com

Many Mac users track events and tasks using iCal, but you have to keep iCal running all the time just to see upcoming events and pending to-dos. iDeskCal is a clever solution that puts your events and tasks right on your desktop, so a quick glance—aided by Exposé if windows and apps are blocking your view—shows you what's coming up and what you need to do immediately.

Desktop Calendar With iDeskCal, a quick glance will show you upcoming events and pending tasks, even if iCal isn't running.

By default, iDeskCal shows several days' worth of events, starting with the current day. For each event, you see the start time, the event name, and, via a color-coded circle, the calendar to which the event belongs. The number of days that are visible depends on the font size, which you can customize, and the size of the iDeskCal window, which you can set by manually entering dimensions and positional coordinates or by resizing with the cursor. (To do the latter, you have to enable a setting that adds a title bar and border to the display area. I recommend doing so and then disabling the setting after you've resized the window.)

You can also choose to view your iCal tasks, which appear just to the left of the calendar display, with the same color-coded circles indicating which tasks belong to which calendar. The program also provides keyboard shortcuts and a menu-bar menu for adding events and managing tasks without opening iCal.

The resizing technique is less than elegant, and I found that new calendars don't show up in iDeskCal until you quit and relaunch the program. Still, this is a handy utility that makes it easier to see at a glance what's up in your busy life. ✖

Senior Editor **Dan Frakes** is always looking for great, low-cost products. Send your comments and suggestions to macgems@ macworld.com.

Clipstart 1.0.1

With more people taking videos with compact video recorders—as well as with the iPhone 3GS—there's a growing demand for a way to organize those clips. Riverfold Software's Clipstart (●●●½; $29; www.riverfold.com) provides a central library for storing video clips, letting you name and tag them, play them back, trim them, and upload them to video-sharing sites.

Clipstart's spartan clip-browsing options include list, small, and detailed views, and you can sort each view by date, name, or duration. A pop-up menu in the toolbar lets you restrict the view to clips from a particular year; and for any clip, you can edit the name and date, as well as add tags to help identify or group clips using the search field. You can play a clip in one of three ways: as a thumbnail, enlarged in the main pane, or using Leopard's Quick Look feature.

When uploading to YouTube, Flickr, or Vimeo, you can add a description and specify who can view a video; tags and titles are pulled directly from the metadata you've entered in Clipstart. To trim a clip before uploading, you just double-click on the video to reveal a timeline, and then click and drag to select the portion of the clip you want to keep. This editing is nondestructive, so you never accidentally delete footage.

Clipstart is a new program, and a very basic feature set and a few rough edges reflect its youth. But it's a useful program that serves a much-needed purpose.—DAN MOREN

iPhoto for Videos Clipstart makes it easy to organize and browse your video clips.

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PC Connection

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- Heather Clancy, ZDNet.com

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Save Money with Your Mac

20 WAYS IT CAN HELP YOU SPEND LESS—AND GET MORE

Macs aren't usually considered bargain machines, but in reality they can save you lots of money in lots of different ways. They can help you shop smarter and manage your money better. They can be your conduit to less expensive telephone and television services. And, despite Apple's rigid pricing policies, you can even buy Macs themselves (as well as Mac peripherals) for less than you might think.

With that in mind, we asked some of our most bargain-savvy writers to share their thoughts on ways you can use your Mac to save money. They responded with the 20 tips you'll find in the pages that follow. The suggestions range from the obvious to the obscure, but all of them will help keep more money in your pocket. And in times like these, who wouldn't want to do that?

ILLUSTRATIONS BY JOHN UELAND

1 CHECK PRICE-COMPARISON SITES

Whether you're in the market for an ink-jet printer, a pair of shoes, or something else altogether, the Web can help you find the best deal. The simplest of the online tools are price-comparison sites that show you what Web vendors are charging for specific products. Type the name of the product (generally a brand name and model number) to see a list of prices. Some of these sites also include vendor ratings, based on customer feedback.

Among my favorites are Google's Froogle (froogle.google.com); CNET's Shopper.com (shopper.cnet.com), which focuses on tech products; and *Macworld*'s own Macbuy (macbuy.macworld.com). Tip: Sites format product names and models differently, so be as general as possible when entering your search term. For example, a search for **Sennheiser 650** will find the desired product whether it's formatted as HD650, HD 650, or HD-650.

If you're looking specifically for computer memory, try a site dedicated to comparing RAM prices, such as dealram (dealram .com) or Ramseeker Mac (www.ramseeker.com). Each lets you choose your particular Mac model and then shows you the best deals on compatible memory.—DAN FRAKES

SEARCH FOR COUPONS

Many sites offer free shipping or special deals via mailing lists or private sales. Sites such as RetailMeNot (www.retailmenot .com), FatWallet (fatwallet.com/ coupons.php), dealcoupon (dealcoupon.com), and CouponCabin (www.coupon cabin.com) let you search for online coupons and discount codes. You can also find printable coupons for real-world retail stores online.—DF

3 Follow Vendors on Twitter

Some retailers announce sales and temporary discounts on Twitter (www.twitter.com). If you follow the vendor's account, you can be notified of the latest bargains. Perhaps my favorite is Amazon MP3 (twitter.com/ amazonmp3), which announces Amazon MP3's daily deals— sometimes entire albums for as little as $2. Also check out Woot (twitter.com/ woot) and the Priceline Negotiator (twitter .com/TheNegotiator) for last-minute travel deals.—DF

4 Subscribe to and Search RSS Feeds for Bargains

Want to keep an eye out for great deals in general? Many deal-finding sites offer RSS feeds. Just subscribe to a site in your favorite news reader—such as Apple's Safari or NewsGator's free NetNews-Wire (★★★★★; macworld.com/2799)— and it'll pump out a constant stream of the latest bargains. You'll find a few of the best RSS feeds at dealnews (dealnews .com); dealmac (dealmac.com), a version of dealnews.com dedicated to Mac-related deals; and Techbargains (www .techbargains.com).

You can also take advantage of features in your news reader or browser to watch for deals on a particular product or type of product. In Safari, view the RSS feed you want to monitor, type the product name in the Search Articles field (a more general product name is better than a specific one), and then click on Bookmark This Search.

A dedicated RSS reader such as NetNewsWire lets you watch and search multiple RSS feeds simultaneously. In NetNewsWire, create a folder and drag all your "deal" feeds into the folder. Then create a Smart List (File ▶ New Smart List), matching all conditions, where the conditions are Group Name Contains *yourdealsfoldername* and Title, Description, Or Summary Contains *productname*.

The result of these saved searches is a list of hot deals on the specific product you're planning to buy. These sites also have searchable archives, so even if you don't subscribe to their RSS feeds, you can search for previously posted discounts.—DF

6 Consider Online Savings Accounts

If the stock market spooked you, odds are you moved your savings to an FDIC-insured savings account. But if you chose a brick-and-mortar bank, you might as well have stashed your cash under the bed. Regular old savings accounts offer interest rates as low as 0.10 percent these days, while Internet banks such as ING Direct (home.ingdirect.com) and HSBC Direct (www.hsbcdirect.com) return a far higher percentage on your money (currently around 1.50 percent). Although that's not enough to make you Scrooge McDuck rich, it can add up. These online banks are insured, so your money is safe. Most also require a $1 minimum deposit and offer ATM cards so you can quickly access your money when you need it.—MICHAEL GOWAN

5 Compare On-the-Fly before You Buy

With prices and product information so easily accessible online, only the rich and foolish don't comparison shop. But what if you're standing in the store with the item in your hand? You think it's a great price, or maybe you're unsure you'll be able to find it anywhere else. How do you decide what to do? Sol Robots has created Save Benjis (♦♦♦½; macworld.com/4059), a $1 app for the iPhone and iPod touch that puts a retail shopping search engine in the palm of your hand. Shop for a variety of popular consumer goods—from books and cosmetics to office equipment and home theater systems—using keywords, model numbers, or bar-code numbers. The app surveys a long list of big-name retailers and online merchants to find the best price available. Revisit your searches via the Recent Products screen, or e-mail yourself a link to the best deal. You can even make purchases right from the app itself.—TONY CRAINE

7 SOCK AWAY COLLEGE SAVINGS

College costs continue to soar, even as many people are struggling simply to get by. How do you save for college in hard times? Try BabyMint.com (babymint.com) or Upromise (upromise.com).

Once you've signed up for an account at BabyMint, you can shop via the site at places like Target.com and Home Depot (homedepot.com). You receive a rebate on a percentage of your purchase (1 to 26 percent, according to the site) that goes directly into your child's 529 college savings account. (These state-run savings plans work much like 401k accounts and can have significant tax benefits.) You can also sign up for a BabyMint credit card for offline shopping.

Upromise works in a similar fashion, but offers rebates through more online stores (about 600, compared with BabyMint's 300). Download the TurboSaver (macworld.com/5132) plug-in for Firefox, and you'll be alerted when you search for or visit any of the plan's partners.—MG

8 Eat Out for Less

Going out to eat is a budget killer—but eating in all the time can get old fast. The trick is to lower your bill but still enjoy your favorite restaurants. Restaurant.com (www.restaurant.com) can help. The site sells gift certificates to many restaurants at a discount. For example, a $25 gift certificate generally costs $10—so you save $15 on your bill. To make it even more enticing, the site frequently offers coupon codes for 50, 60, and even 80 percent off—bringing that $25 gift certificate down to $2. That's a deal. Restrictions apply, so be sure to read the fine print carefully. Some restaurants will accept coupons only during the week or require a minimum purchase.—MG

9 SWITCH TO INTERNET CALLING

A phone line is indispensable, but its costs can sometimes seem intolerable. Internet calling lets you use a phone or computer to place calls to and from "real" phone numbers on the public switched telephone network (PSTN). Internet calling plans can help you save money by capping call expenses: they combine local, long-distance, and calling features (such as voice mail and caller ID) that can cost extra on landlines.

You should consider only those services that include unlimited incoming calls and no per-minute fees for outbound calls (at least in the United States). Some packages include, or allow you to add, unlimited calls to other countries. (Such *unlimited* packages often have a time-limit per month; read the fine print.)

Tap Cable and DSL Bundles VoIP has a reputation for crackling sound quality and dropped calls. Here, broadband operators have an advantage: They manage both your side and their side of the phone call; the gear they provide for your network talks directly to the hardware on their end. These firms also split out calls in their network before they hit the hurly-burly of the Internet. In an attempt to wrest broadband business from telephone companies that provide DSL, cable operators have been heavily discounting service bundles that include regular and some premium television, voice (unlimited U.S. calls), and broadband. This "triple-play" bundle typically starts at under $100 per month; HD may be extra.

Some DSL broadband providers, including Best Buy's Speakeasy (www.speakeasy.net), also offer their subscribers Internet calling. Speakeasy's plans for broadband DSL and VoIP start at $84 (unlimited calls in the contiguous United States, plus 22 other countries).

Try VoIP-Only Providers VoIP-only companies use whatever broadband Internet connection you have for your calls. As a result, the quality of the calls depends on the quality of your local network, your available bandwidth, and your broadband provider, as well as the connection from your broadband provider to the VoIP firm's gateway. VoIP-only plans are the best overall value outside of broadband bundles, and they work with any broadband provider.

Vonage (www.vonage.com), the largest and one of the oldest independent VoIP providers, supplies you with an adapter (free in some plans) that lets you use existing telephones. Vonage offers several plans (two-year contract required) starting with an $18 per month 500-minute plan (for the United States, Canada, and Puerto Rico) and a $25 per month unlimited calling plan (those countries plus five European countries you choose). Prices are similar to those for other VoIP plans.

Skype (skype.com) takes a computer-based approach to VoIP. Attempts over the last few years to offer Skype phones and Skype landline adapters haven't gained much of a foothold. Instead, you typically use a USB headset and a computer or an iPhone application (over Wi-Fi only) to place and receive calls. Both computer-to-computer and PSTN calls are handled in the same way.

You can call other people's Skype accounts for free or pay for calls to the regular phone network. Skype charges $3 per month for unlimited outbound calling to the United States and Canada. An inbound phone number costs $60 per year, but there's a 50 percent discount when it's combined with any outbound subscription plan. That totals just $5.50 per month for unlimited inbound and U.S. and Canada outbound calls.

Ooma A company that offers a twist on traditional VoIP is ooma (www.ooma.com): you pay a one-time fee of $250 for the hardware (the ooma Hub) and service, and then get unlimited U.S. calling from then on. For $13 per month or $100 per year, you can also opt for a premium offering that comes with an on-demand second line, multiple voice-mail boxes, and other features. The benefits of ooma do rely on the company's ability to stay in business at least long enough so you recoup your investment.—GLENN FLEISHMAN

CAN YOU LIVE WITHOUT A LANDLINE?

Sure, you can save money using Internet calling. But many folks are nervous about ditching their landline because it's also a lifeline in an emergency. Thankfully, Internet telephone providers have made a lot of progress in addressing this critical issue:

911 Service When you use a landline to call an emergency 911 call center, operators can pinpoint your precise location. Internet telephony providers are trying to mimic that service, by verifying your address and possibly taking other steps to tie your VoIP adapter to a physical location.

Alarm Systems Newer VoIP services can work with alarm circuits by mimicking a landline. Check with your alarm company before you make a switch, however, because a VoIP line needs special wiring to make it work with an alarm.

Power Outages Landlines often stay on even when the power in your neighborhood is out. Not so with broadband modems. DSL and cable firms are starting to offer backup batteries for their VoIP modems. Some modems come with batteries that provide three to eight hours of standby service and a few hours less of calling.—GF

10 Save Cell Phone Minutes by Placing Calls over Broadband

Want to get rid of your landline, but prefer to rely on a cell phone rather than VoIP? You might be able to save money by placing calls from your mobile phone over broadband. You need DSL, cable, or a T-1 line (a business-grade service) to do this. The happy side effect is that you'll get dramatically better call quality inside your home.

Use T-Mobile's HotSpot Calling

T-Mobile (macworld.com/5135) offers Unlimited HotSpot Calling ($10 per month, individual or family plans), which routes calls via Wi-Fi when you're on your home Wi-Fi network or at T-Mobile hotspots or other hotspots to which you have access. You don't use any of your plan minutes when you make U.S. calls or receive calls as long as a call starts on a Wi-Fi network.

You need a T-Mobile voice plan of $40 per month (individual) or $50 per month (family) or more, and one of several models of dual-mode phones that support UMA (unlicensed mobile access), the technology T-Mobile uses. You can also get a router from T-Mobile ($20 with a two-year contract) that has special features intended to reduce handset battery use.

T-Mobile also offers a home VoIP add-on for use with regular telephones (T-Mobile @Home; $10 per month;

unlimited U.S. calls). This option is much like the Internet calling services described earlier, but it's still an add-on to a cellular subscription, and it requires a special router (HiPort; $40 with a two-year contract) that can also do HotSpot@ Home (see "Phone Savings Galore").

Turn to Femtocell Technology

Other carriers have opted to extend mobile phones to broadband through femtocells. These are low-power versions of the cellular base stations on towers, designed to plug into a home broadband connection.

Both Sprint Nextel (macworld.com/5136) and Verizon Wireless (macworld.com/5137) offer 2G (second-generation) voice-only femtocells. For Sprint's offering, you must purchase a $100 Airave femtocell for your network and pay a $5 monthly fee to use it with your account. You can then get unlimited U.S. calling via

the Airave for $10 per month per line, or $20 per month for multiple phones on a group plan sharing minutes. Sprint's plan makes sense only if you can shift at least $15 for you or $25 for a family from your long-distance bill or reduce your monthly cell plan's cost—or both. On the other hand, Verizon Wireless is selling its Network Extender ($250) purely as a signal improver. That makes this service useless if you're trying to save money: you're burning through minutes just as fast via the femtocell as over the regular phone network.

AT&T's 3G MicroCell, which the company recently confirmed is in active testing, will work only with 3G phones, and handles both voice and data calls. However, AT&T hasn't revealed pricing or plans. iPhone users will have to wait to see if they'll be able to save a dime this way.—GF

11 DO THE MATH BEFORE BUYING IN BULK

Is it always better to buy in bulk? You won't need to do the math in your head when you've got Frugal (♦♦♦♦; macworld.com/5138), the $1 iPhone and iPod touch app from Tidal Pool Software that helps you find the best combination of price and quantity while you're shopping. Most retailers provide helpful price breakdowns on their store shelves (per ounce, per pound, per item, and so on), which can make comparison shopping easy. But when that information isn't available—or when it uses different units—Frugal crunches the numbers for you in an instant. Enter the price, quantity, and units using big calculator-style keys. Frugal then shows the price breakdown and picks the best value. Know when to pull the trigger on a good deal—and when to save yourself the hassle of lugging home a year's worth of canned green beans for the sake of saving a few cents.—TC
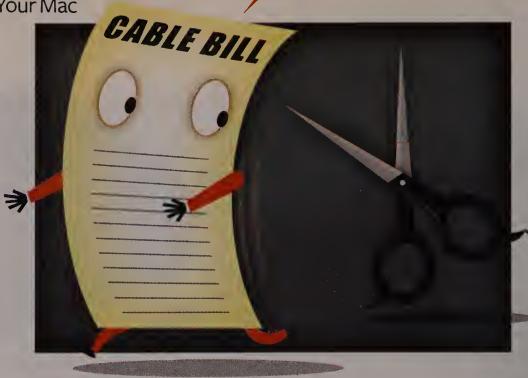
12

Cut the Cable Bill

Consider your cable or satellite TV service. Of the hundreds of channels offered, how many do you actually watch regularly? A dozen? Two? As money gets tighter, you may wonder if it's worth paying $50 to $100 a month for that handful of channels—particularly when your Mac and the Internet can help you spend less. Here's how:

Access Free TV Online For free network television content, Hulu.com (www.hulu .com) and its free Hulu Desktop application (macworld.com/5139) are a good place to start. Hulu carries new and older programming from NBC, Fox, FX, Disney, ABC, and Comedy Central, including some HD content. You're required to watch commercials, but they're short and appear far less frequently than they do on "real" TV. Hulu also has movie trailers and some movies in its catalog.

YouTube (www.youtube.com/shows) has recently added TV shows to its service. Though its catalog isn't as extensive as Hulu's, you can still pick up on old shows such as the original *Outer Limits* and *Star Trek*.

The networks also have their own sites with current and archive material. These include CBS (www.cbs.com/video), ABC (macworld.com/5198), NBC (www.nbc.com/ Video/library), WB (www.thewb.com), CWTV (www.cwtv.com), FX (www.fxnetworks.com), and Comedy Central (www.comedycentral .com). If you're in the United Kingdom, you can watch the BBC via its iPlayer (www.bbc .co.uk/iplayer). Although the BBC blocks non-U.K. visitors based on their IP address, you can use a VPN service such as WiTopia (www.witopia.net) to obtain a virtual UK IP address, which allows you to access this content. (WiTopia also works for U.K. users wishing to view U.S. content.)

The networks intend you to watch these programs within a Web browser on your computer, but you don't have to. Three free applications based on the open-source XBMC media center—XBMC (xbmc.org), Plex (www.plexapp.com), and Boxee (www .boxee.tv)—allow you to watch a variety of streamed programs from within these attractive and easily navigable applications. Plex and Boxee also give you access to Netflix's (www.netflix.com) Watch Instantly content (Netflix subscription required). Although Netflix doesn't make its best offerings available via Watch Instantly, having access to this stuff for no extra charge beyond the price of your monthly subscription is quite a bargain.

Focus on Your Favorites Free is best, but inexpensive isn't a bad runner-up. Suppose you're selective about your viewing and watch only four shows religiously—say, AMC's *Breaking Bad* (macworld.com/5140), ABC's *Lost* (macworld.com/5141), Showtime's *Dexter* (macworld.com/5142), and Fox's *House* (macworld.com/5143). Why not spend $121 to purchase the last season of each of these shows in standard definition from the iTunes Store? You'll get months of commercial-free entertainment for a fraction of the cost you'd pay for the cable or satellite subscription required to bring them to your home over the course of the television season.

Plus, your shows will be playable not only on your Mac, but also on an Apple TV (⬤⬤⬤⬤; macworld.com/3454) and an iPod or iPhone. Connect a Mac to a television and AV receiver (as I describe in "Revisiting the Mac Mini Media Center" [macworld.com/4801]), and you've got a good start on finding an affordable replacement for your current TV service.—CHRISTOPHER BREEN

Arrested Development: Family Ties
Season 3 : Episode 11 (21:47) ★★★★½

Online Entertainment If you're trying to cut back on the amount of money you spend on entertainment, Hulu Desktop can help. Use it to view streaming (and free) TV programs outside a Web browser.

13 SWAP BOOKS INSTEAD OF BUYING

The tradition of passing along books you've read has gone digital. BookMooch's book-bartering system (bookmooch.com) works on a points system: each book you give away earns you a point; you can use those points to "mooch" a book from someone else. (You do have to pay for postage.) You can keep the book you mooch, or add it back to the available list and keep the chain going. The selection is a bit hit or miss. But if you churn through books quickly, and your local library can't keep up, this site may meet your need for reads.—MG

Reuse Old Hard Drives

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The next time you need an external hard drive, take a look in the closet first. If you've got an old Mac going to waste, pull out its hard drive. Just buy an inexpensive enclosure, and you can reuse the drive as an external storage device. An enclosure is basically a housing that protects the drive and allows you to connect it to a USB, FireWire, or eSATA port. You can find enclosures for $20 to $50—for example, from Other World Computing (macworld.com/5147), Newegg.com (www.newegg.com), and TigerDirect.com (www.tigerdirect.com).

Enclosures are available in 3.5-inch (standard desktop) or 2.5-inch (notebook) sizes. Make sure you pick the proper internal interface—IDE/ATA or SATA, based on the type of drive you're converting. And remember that old drives fail, so you may not want to keep irreplaceable data on your repurposed drive.—MG

16 MONITOR YOUR ENERGY CONSUMPTION

Powering down your Mac every night can help the environment. It can also help your bank account. One surefire method for cutting energy costs is to keep tabs on how much energy you consume. Zerogate's $5 MeterRead (❖❖❖❖; macworld.com/5144) for iPhone and iPod touch provides a handy way to record periodic meter readings so you can get a grip on your monthly energy costs. Each time you enter a reading, the app estimates your 30-day energy consumption based on your current pace. You can set up multiple meters for home, car, and solar energy, and track day and night usage.—TC

15

Get the Best Deal on a Vacation

You needn't have buyer's remorse when you travel if you're willing to do some Web research beforehand.

Sites such as Yapta (www.yapta.com) and Kayak (www.kayak.com) can do comprehensive price comparisons for you. Enter your destination and the dates you want to travel, and these sites will gather prices from major hotels, airlines, and rental car vendors.

You can also use these sites to take advantage of best price guarantees. Most major hotel chains offer such promises, so you can feel confident you got the lowest price for a room at the time you booked. For example, say you book a room on Marriott.com (www.marriott.com) and then find the same room on another Web site for less within 24 hours. Marriott will match the lower price and give you an additional 25 percent off. Check with each hotel chain for restrictions.

Expedia (macworld.com/5145) and Travelocity (macworld.com/5146) now offer similar guarantees. Travelocity will even monitor prices for you if you've booked a flight and hotel package.—MG

17 BUY A USED MAC (WITHOUT GETTING BURNED)

With the economy in the tank, you or someone you know is probably putting off the decision to buy a new Mac. But what about a used Mac? Sure, it may not have the glitz of a shiny, new unibody MacBook. But an older-generation MacBook might just do the trick for a lot less money. Here's how to make sure your money is well spent.

Check the Battery Life (Laptops Only) Laptop batteries don't last forever. While you once got three hours of use out of one charge, you now get less than two. So how can you make sure the battery in the laptop you're considering is still good? Test it. When you go to look at the laptop you're considering, bring a copy of Christoph Sinai's free coconutBattery (♦♦♦½; macworld.com/5148) on a thumb drive with you. Pop it into the drive to check how much life is left in the battery. What you're looking for is cycle count—that is, the number of times the battery has been charged and discharged during its lifetime. According to Apple (macworld.com/5149), you can charge a battery about 300 times before it stops holding an 80 percent charge. If coconut-Battery tells you the cycle count is over 250, you might want to skip that machine or ask for a discount so you can buy a new battery. Replacement batteries cost around $129 from the Apple Store (macworld.com/5150).

Ask If It's Still under Warranty Some buyers might worry about the reliability of used Macs. New Macs come with a one-year factory warranty that guarantees the reliability of all of the Mac's parts (www.apple.com/legal/warranty). If anything from the RAM to the display dies within a year, you can get a replacement part for free (although you may have to wait a day or three for your local Apple Genius to order and install the part).

Fortunately for you, some used Mac sellers get rid of their gear before that year is up. Ask whether the Mac in question is covered, and if so, when the coverage expires. If the warranty is still valid (even if it's in its last week), you can buy AppleCare, a two-year extended warranty. (The price of AppleCare depends on the type of Mac you purchase. See the AppleCare Web site at www.apple.com/support/products for details.) That way, if the machine turns out to be a lemon or to have a defect, you're covered. If you do buy the Mac, be sure to have the prior owner transfer the warranty to you as soon as possible. A simple phone call to AppleCare at 800/275-2273 should do the trick. The previous owner will need to give your contact information to the AppleCare representative.

Check the Optical Drive and Get the Discs Bring a DVD with you so you can verify that the optical drive works. Also make sure to get all of the computer's install DVDs. These are pretty much useless until the one extremely stressful day that you really, really need them. If your Mac's software is on the fritz, those DVDs are probably going to be the first thing you'll look for—an entire OS reinstall can fix many a problem.
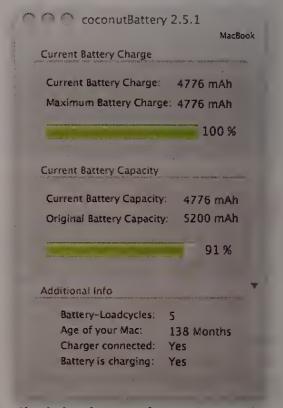
Consider a Refurbished Mac If buying a Mac out of warranty freaks you out, there are other options. First, consider the refurbished model section (macworld.com/5152) of Apple's online store. You can often get a great deal on Apple hardware at a fraction of the cost of a new machine, plus it will come with Apple's standard one-year warranty. Many independent Mac retailers offer a 90-day warranty on parts, labor, and hardware sold as part of a refurbished or reconditioned Mac system. Be sure to check with your local shop to find out what its policy is.

If a Deal Seems Too Good to Be True, It Probably Is Never buy a Mac that's undervalued unless it's coming from a family member or a longtime friend you trust. How do you know what the going rate for a used Mac is? Check eBay (www.ebay.com). Look under the "Completed Listings" link, which will appear in the lower left area of the window after you've searched for something. Searching eBay and craigslist (in various cities around the country) is a great way to see what the acceptable price range for an item is.

When buying the Mac, take into consideration whether you'll need to put any additional money into it for repairs, possibly including an older AirPort card (not the AirPort Extreme, which some older Macs, including the iBook G3, do not support), additional RAM, or anything else. That, plus whatever you've budgeted to spend, should give you a more realistic idea of what your total expenditure will be.—CYRUS FARIVAR

coconutBattery 2.5.1
MacBook

Current Battery Charge

Current Battery Charge: 4776 mAh
Maximum Battery Charge: 4776 mAh
100 %

Current Battery Capacity

Current Battery Capacity: 4776 mAh
Original Battery Capacity: 5200 mAh
91 %

Additional Info

Battery-Loadcycles: 5
Age of your Mac: 138 Months
Charger connected: Yes
Battery is charging: Yes

Check the Charge Before you buy a used laptop, see if the battery is kaput. Here, the coconutBattery utility's Battery-Loadcycles count shows that this MacBook has been charged only five times.

18 Find the Cheapest Gas

Shopping online makes bargain hunting easier and cuts driving time. But there's at least one thing you can't buy without driving to get it: gasoline. You can, however, hunt for cheap gas online without driving from station to station to find it. With United Communications Group's iGasUp (★★★½; macworld.com/5153) for the iPhone and iPod touch, you can retrieve a list of the ten local gas stations with the cheapest prices, complete with a map and driving directions. The app determines your location and searches the Oil Price Information Service database to find the best prices within a distance that you select, ranging from 1 to 15 square miles. iGasUp's results are rarely more than two days old and are often as recent as within the hour, giving you an idea of how likely it is that the price you see is the price you'll get. You don't buy iGasUp; you subscribe to it for a year for $3. With the way gas prices fluctuate, it probably won't take long to reclaim that in savings.—TC

19 KNOW WHERE YOUR MONEY GOES

When times get tough, you need to resort to the financial equivalent of a root canal: a budget. But budgeting can be simple with Pennies (★★★½; design by a knife; macworld.com/3908), a $3 expense-tracking app for the iPhone or iPod touch. Each month, enter your monthly spending allowance. Every time you buy something, enter the amount and assign the transaction to an expense category. Add notes for greater detail. As the month progresses, a gas gauge–like meter shows how much you have left to spend, and stat boxes display your top three expenses and per-day spending average. You can export the data in a .csv (comma-separated values) file and open it in a spreadsheet on your Mac. Once you've tracked a month's worth of expenses, you'll have an informative snapshot of your spending habits. It's up to you to figure out where to cut back. You can't avoid the sobering reality that a budget's limits impose, but the budgeting process doesn't have to be as stressful or complex as you may fear.—TC

20 Find Free Stuff

Why buy new what you can get used—especially when you can get it for free? The Freecycle Network (www.freecycle.org) keeps track of local free-exchange groups whose goal is to keep used stuff out of landfills and put it into the hands of people who want it. You'll find just about anything on Freecycle, from printers to Mac SEs to random mice and cables. People post what they have to offer; you respond if you want it. Most offers receive more than one response; it's up to the giver to decide who gets the item.—MG

Senior Editor **Christopher Breen** (@BodyofBreen on Twitter) is the author of *The Flip Mino Pocket Guide* (Peachpit Press, 2009). **Tony Craine** is a writer and voice actor and contributes iPhone app reviews to Macworld.com. **Cyrus Farivar** reports for Public Radio International, National Public Radio, and the *Economist*. **Glenn Fleishman's** most recent book is *Take Control of Your 802.11n AirPort Network* (takecontrolbooks.com, 2009). Senior Editor **Dan Frakes** covers software bargains every week in his Mac Gems blog (macworld.com/macgems). **Michael Gowan** is a freelance technology writer from North Carolina.

Budget Mac

We challenge three Mac users to build their ultimate setup for $300
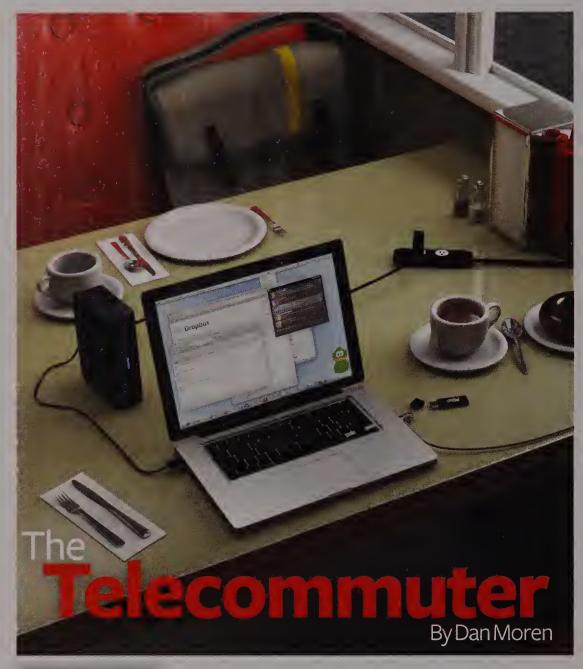
Illustrations by Jeff Grunewald

The Rules

For our challenge, we assumed that each person already had an Intel Mac running OS X 10.5, an Internet connection, and a copy of iLife (which ships with every new system). Challengers were given a budget of $300 and told they could shop anywhere online for their software and hardware, to find the best deals. The shopping sprees took place at the end of May 2009. Some products' prices and availability may have changed since then.

Buying a Mac isn't an inexpensive proposition. For the most part, it's a price Mac users are willing to bear for a sleek, well-designed, powerful system that's relatively free of viruses and other annoyances more common in Windows systems. But just because you can afford a Mac, that doesn't mean you've got money burning a hole in your pocket. Luckily for you, there's a bounty of great low-cost—or even free—Mac software waiting to be plucked.

But can you build an entire system out of these bargain finds and the software that comes with your system? To find out, we challenged three devoted Mac users to create a fully loaded and functional Mac setup for a telecommuter, a multimedia blogger, and a student. Their budget? A mere $300.

These cost-conscious shopping sprees show that you don't have to spend a lot to outfit your Mac. Whether your bank account is flush with cash or you're living on PB&J, you can take away plenty of tips for outfitting your own Mac.

The Telecommuter

By Dan Moren

THE SETUP As a telecommuter, my top concern is staying in touch with office colleagues around the country. I need to be able to write and edit stories, collaborate on documents and projects in real time, and keep up with the latest developments in my field. And I need to do it all from wherever I happen to find myself: at home, in a hotel room, or in a local café. Obviously, my mobile office starts with a Mac laptop running Mac OS X 10.5 (Leopard). From there, my mantra is to keep it simple and travel light.

Instant Communication

Despite the thousands of miles separating me from my coworkers, I don't want to feel isolated from what's happening in the office. More important, I need to be able to communicate easily with other members of my team about projects.

Fortunately, there's no shortage of free tools for these tasks, from both Apple and third parties. For e-mail, OS X's built-in Mail client is a no-brainer. However, I decided to replace Apple's iChat instant messaging software with the free Adium (♦♦♦♦; macworld.com/4635), which lets me keep track of chats with my coworkers and friends in one convenient location, no matter what network they're on, from AIM to Google Talk to, yes, even Facebook.

Despite its frivolous reputation, Twitter's social networking service is also an important part of my strategy. The service's steady stream of status updates creates a public dialogue about interesting trends, feeds me breaking news relevant to my job, and keeps me in touch with professional and personal contacts without making me expend a lot of energy. To keep Twitter from absorbing too much of my time, I downloaded The Iconfactory's Twitterrific (♦♦♦♦½; macworld.com/4924), which is free—so long as I don't mind a few ads. It lets me keep up with my Twitter feed in a convenient pop-up window, without having it take over my life.

Collaboration

Since I need to be able to interact with coworkers as though I'm just a shout away in the next cubicle, I signed up for an account with the free Google Docs apps. This suite of online tools lets me and my colleagues team up over the Internet on word-processing documents and spreadsheets—all in real time. I can even export documents as PDF or Microsoft Office documents, if needed.

Google Docs takes care of instant collaboration, but I do occasionally have to receive files of a more *Microsoftian* persuasion. While there's no perfect replacement for Microsoft Office, the $150 price tag for the Home and Student Edition would take too big a bite out of my budget. I looked at the free Open-Office.org (♦♦♦½; macworld.com/4132), which offered many of the tools I needed, but found its interface too rough around the edges. Ultimately, I decided it was worth making a small investment in Apple's $79 iWork '09 suite (www.apple.com/iwork) to have well-designed tools that allow me to work with most Word, Excel, and PowerPoint documents.

I also need the flexibility to share large files, including photos, audio recordings, and video. Though e-mail is sufficient for most tasks, every once in a while I end up with a file that is more than the mail servers can handle. For these scenarios, I turned to Cyberduck (♦♦♦♦; macworld.com/4635). Cyberduck is a master of all flavors of file transfer, from FTP to WebDAV, and its interface is simple and intuitive, so you rarely have to resort to the help files. The developer asks for a donation, so I put in $5.

Prying Eyes, Sticky Fingers

When you move around as much as a telecommuter does, making sure that your information and physical property are secure is essential.

The preponderance of free and cheap Wi-Fi networks is great, but I deal in sensitive data and frequently need to access restricted work services. That means logging into a virtual private network (VPN) and creating an encrypted link to the home office. I could use OS X's built-in VPN client for this, but the Cisco VPN client that my office (and many other businesses) prefer is far more reliable, even if it's not as user-friendly. To make my life easier, I downloaded Fabian Jäger's Shimo (♦♦♦♦½; macworld.com/4667). This $20.95 app provides quick and easy access to Cisco VPN functions via my Mac's menu bar.

Since my laptop is my livelihood, it's important to keep it physically safe as well. Thankfully, all recent Mac laptops (except for the MacBook Air) have a lock slot that you can put to use with a lock and security cable. I chose Kensington's $39.99 ComboSaver Combination Ultra Notebook Lock (us.kensington.com). It sports a long, thick cable that'll deter most casual thieves.

THE TELECOMMUTER

PRODUCT	PRICE
Adium	$0.00
The Iconfactory Twitterrific	$0.00
Google Docs	$0.00
Apple iWork '09	$79.00
Cyberduck	$5.00
Fabian Jäger Shimo	$20.95
Kensington ComboSaver Combination Ultra Notebook Lock	$39.99
Western Digital My Book Essential 1TB Drive	$119.00
Dropbox	$0.00
Crucial Gizmo 8GB Flash Drive	$18.00
Monster Cable Outlets To Go	$13.98
TOTAL	$295.92

Safety Net

Of course, the security of your information is only as good as your last backup. Leopard's Time Machine makes backing up easy and relatively painless. It does require an external drive, however. I picked up the roomy Western Digital My Book Essential 1TB drive for a mere $119 from NewEgg.com (www.newegg.com). The only trick is that I have to remember to plug in the drive every time I sit down at my desk at home.

Of course, since I spend most of my workday away from the house, I also need a way to back up on the go. Since I don't want to carry an external hard drive with me, I back up only my most important files to Dropbox (getdropbox.com). This online service offers 2GB of free storage space, and its Mac syncing client makes the process almost effortless.

The Paper Problem

Most of my work falls into a paperless routine, but every once in a while I have to scan, print, or fax. Since I'm not about to lug peripherals around with me, I decided to rely on the kindness of others for this. If I can't borrow a friend's hardware, I'll make a trip to the local copy shop or library branch—many of which can accommodate files on a flash drive.

That means I *need* a flash drive. I snagged an 8GB Crucial Gizmo flash drive for just $18 from Newegg.com. Crucial is a reliable memory manufacturer, and 8GB should be enough to hold anything I want to transfer.

Power Supply

Since most coffee shops and other public establishments have a limited number of power outlets, I grabbed one of Monster Cable's Outlets To Go (www.monstercable.com) four-outlet compact surge protectors for $13.98 on Amazon. Now when I'm plugged in, I can offer to share with my fellow telecommuters. Who knows? I may need the favor returned someday.

With my remaining cash, I splurged on a cup of tea—English breakfast, if you're interested—and treated the barista to a nice tip. When you work out

of a café, it's important to remember that the staff are like your coworkers: be friendly and respectful to them, and everyone goes home happy.

On the Move

Putting together a telecommuter system on a small budget wasn't hard. In fact, with a few exceptions, this is exactly what I use every day. With so much great low-cost software for the Mac, hardware took up the bulk of my budget—and most of that was aimed at protecting me from thieves and equipment failures. Such is the life of the roaming worker.

Associate Editor **Dan Moren** has been telecommuting from Boston for almost four years now. Most of the staff at his local café knows him by name.

The Blogger

By Christopher Breen

Whether you're a software developer offering tech support, a teacher enhancing a high-school curriculum, or a chef-for-hire demonstrating your flambé skills, you need a way to reach your audience. These days, that means setting up a blog—preferably one that features video and podcasts as well as text. Starting a multimedia blog isn't hard. Mainly, you need tools for creating and capturing content and the means for staying up-to-date in your area of expertise. In my case, that's technology.

Because of the multimedia aspects of the task, you'll need a reasonably powerful Mac. I started with a 13-inch MacBook, but an iMac would also fit the bill. I've assumed that you already have a camcorder—any DV camcorder made in the past several years will do nicely—though if you were desperate and willing to put up with lower-quality video, you could also get by with just the iSight built into your Mac. The rest we'll take care of with our $300 budget.

Words, Words, Words

To get my message out I'll start with a blog. Although an Apple MobileMe account provides a lovely Web space for such a blog—complete with 20GB of file storage and 200GB of monthly data transfer—it's a $99-per-year proposition, and that kind of money doesn't grow on trees.

Thankfully, a variety of free blogging services are available. The two most popular are Google's Blogger (www.blogger

.com) and WordPress (wordpress.com). I signed up for both and found that while I liked the professional look of WordPress's templates and its roomier 3GB of storage (though you can't use this space for audio or video with a free account), Blogger made it easier to get started. The service offers just 1GB of storage; however, I could easily switch to WordPress later if I wanted to take advantage of its greater storage and configurability.

Because I prefer to craft my blogs offline with text tools that are more flexible than what Blogger provides, I also picked up a copy of Red Sweater Software's $30 MarsEdit 2 (❖❖❖❖; macworld .com/3237). This blog editor is slightly more expensive than illumineX's $19.95 ecto (illuminex.com/ecto), but I find it more reliable and prefer its intuitive interface. (If you don't speak HTML and don't care to learn, ecto is the better choice.)

For long blog entries, I also snagged Bare Bones Software's free TextWrangler (www.barebones.com). This powerful text editor offers great search and formatting capabilities, which make working with lots of text much easier. I can then paste the results into MarsEdit.

To avoid having to type the same text repeatedly, I opted to use a text-expansion tool, which automatically expands abbreviations into a block of text—*bbio* for my current biography, for example. Although I've been using Riccardo Ettore's $27 TypeIt4Me (macworld.com/3179) for years (and like it a lot), I chose to go with SmileOnMyMac's $29.95 TextExpander (❖❖❖❖½; macworld.com/1672). Its numerous predefined abbreviations give it a leg up for new bloggers.

Finally, to ensure that I have a rich stream of content to blog about, I grabbed a free copy of NewsGator's RSS reader, NetNewsWire (❖❖❖❖❖; macworld .com/2799). The RSS support built into Safari is decent, but there's simply no easier way to subscribe to—and quickly view—masses of news streams than with NetNewsWire.

Media Mogul

A podcast just isn't a podcast without a microphone to record it. The internal

microphone on my MacBook doesn't produce professional-sounding results, nor do I care for the sound of cheap USB headset microphones. For these reasons, I dropped another $75 (via Buy.com) on MXL's Studio 1 USB microphone (macworld.com/5185). Complete with stand, carrying case, and USB cable, this is a good-sounding mic for the price.

My microphone mission was not complete, however. For my video screencasts, I needed a mic that improved upon the one built into my DV camcorder. Thus, another $26.49 went for Radio Shack's Hands-Free Tie-Clip Omnidirectional Electret microphone (macworld.com/5186).

For editing my audio and video, GarageBand and iMovie, which came bundled with my Mac, provided all the tools I needed. However, I also wanted the option to capture the activity on my Mac's screen so I could demonstrate how to use software. The Mac OS can capture

stills, but I also needed video capture. While I'm a big fan of both Ambrosia Software's Snapz Pro X (macworld .com/1672) and Telestream's ScreenFlow (macworld.com/4250), their respective $69 and $99 price tags put them out of the running. Instead, I chose shinywhitebox's $20 iShowU (store.shinywhitebox.com). It doesn't capture stills—I'll have to stick with OS X's built-in tools for that—nor does it have ScreenFlow's ability to highlight and zoom in on objects, but it's an otherwise capable motion-capture utility.

Finally, I also liked the idea of interviewing other people for my screencasts and podcasts. Skype (www.skype.com) lets me perform free audio or video chats with any other Skype customers. To record both sides of those interviews, I chose Ecamm Network's $14.95 Call Recorder 2.3.1 (♦♦♦♦½; macworld.com/ 4635). And because I can never count on every guest in my podcast speaking at the same volume, I also downloaded a copy of The Conversations Network's free Levelator (♦♦♦♦; macworld.com/ 4710), which balances the volume of any recording fed to it.

Broadcasting

The cost of podcasting and screencasting depends on how broadly you want to distribute your content and how much grunt work you're willing to do.

To get around having to pay to host videos, I chose to upload my videos to YouTube and then embed a link to the videos in my blog. That way, the videos appear as an integrated part of the blog, but I don't have to pay for storage space or bandwidth.

I could have used the same approach for hosting my podcast (this would involve appending a picture to the podcast, saving it as a movie file, and then uploading it to YouTube), but since I wanted to get that content into iTunes, I needed to store it in a reliable location. That meant paying for a hosting service. To stay within my budget, I chose Liberated Syndication's libsyn50 plan (www.libsyn.com/account). For $5 a month I get 50MB of storage per month

and unmetered bandwidth. This means that even if my podcast is a hit, I won't pay more than $5 a month.

iTunes distribution also requires that you generate an RSS feed for each episode. Although I could do that by hand-tweaking an XML file, it was completely worth the $39 I paid for Reinvented Software's Feeder (reinventedsoftware.com), a tool that makes creating these files and publishing your podcast a cinch.

Compromises

My job was complete, with almost $5 to spare. I could now post professional-looking blogs, embed podcasts and videos, and offer short podcasts via iTunes. I do regret not being able to afford a hosting plan that would allow me to produce videos viewers can subscribe to from within iTunes. And I'm keeping my fingers crossed that my hard drive won't fail, since I didn't have the money for a backup drive.

Senior Editor **Christopher Breen** pens the Mac 911 blog and regularly produces podcasts and screencasts for *Macworld*.

PHOTOGRAPH BY PETER BELANGER

The Student

By David Chartier

THE SETUP Thanks to the prevalent Wi-Fi on most college campuses, laptops are a student's best friend. I started my setup with a MacBook. Apple includes a number of great programs for tackling creative projects, but for many of the more academic (and not-so-academic) parts of student life, I had to fill in a few blanks. Making things more challenging, I needed a system that could do it all—including keeping me on top of classroom lectures, organizing projects, making the most of my downtime, and helping me stay in touch with far-flung family and friends.

Study Aids

Let's start with the basics: getting homework done. There's no shortage of options for taking notes, writing papers, or recording lectures. But finding one program that covered everything was more of a challenge. To make sure I can tackle anything my professors throw at me—whether it's a finance class this semester or French poetry the next—I decided to invest in Microsoft Office

2008 (macworld.com/5188). Yes, it's more expensive than its competition, but it has the best productivity bang for my buck. Word 2008 features a Notebook Layout view perfect for taking notes and outlining papers, and the built-in voice recorder ensures that I can go back to hear exactly what my professor said. Excel is practically a necessity no matter what your major, while PowerPoint and Entourage round out the package nicely.

To make it all the more attractive, I was able to pick up the Home and Student Edition on Amazon for $107.99, which is just $37 more than the student pricing on Apple's competing product, iWork.

For studying in bite-size morsels, I also picked up a copy of Loopware's flash-card maker, the $14.95 iFlash (♦♦♦♦½; macworld.com/4681). It includes a massive library of premade card sets such as language primers and math guides, and gives me the freedom to create my own.

Taskmasters

To keep track of all my assignments, I picked up Altered Axis's Schoolhouse 2 (♦♦♦♦; macworld.com/5189). This project-management app can track grades and tasks, and publish assignment schedules to the Web, letting me collaborate with classmates. And since it's donationware, I was able to set my own price (after evaluating my budget, I went with $7).

There are plenty of other things going on around campus beyond work. For these, I stuck with Apple's iCal. To keep iCal visible, I downloaded HashBang Industries' $12.99 iDeskCal (www .hashbangind.com), which displays iCal's events and to-dos right on my desktop.

And because sometimes an iCal alert just isn't enough—especially if I've dozed off—I also picked up Koingo Software's $19.95 Alarm Clock Pro 9 (www.koingosw .com), which can text you at a specific time, start an iTunes playlist, start up your Mac, and open specific documents.

Finally, to help me keep up with the local music scene, I downloaded iConcertCal (www.iconcertcal.com). This free plug-in scans your iTunes music library and displays a calendar of upcoming concerts, including links to buy tickets. You can then save a version of that calendar into iCal.

Campus Security

Thieves love laptops as much as students do. Fortunately, most notebooks include a standard lock port. Some notebook locks work with a key mechanism, but keys are easily misplaced. Instead, I got Kensington's ComboSaver Combination Portable

Notebook Lock (macworld.com/5190) for $20.33 at Amazon. You can attach its coiled six-foot cable to almost any grounded object, such as a bolted-down table in a café or the desk in your room.

Bacon Saver

Hard-drive meltdowns and lost papers always seem to happen when you're on a deadline. And professors are notoriously unsympathetic to these excuses—which is why you can't repeat this mantra often enough: *back up your stuff*.

The online backup service Dropbox (www.getdropbox.com) is a great solution. Dropbox's free plan offers 2GB of online storage, and it's incredibly easy to use. When you save a file to a Dropbox folder on your Mac, it's automatically uploaded to your secure account online. Dropbox even keeps track of previous versions— perfect for recovering an older version of your paper before you added a late-night two-page rant about your professor.
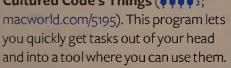
What's more, your Dropbox files are accessible on the Web (the syncing service works on Mac, Windows, and even Linux), so you can work with just about any computer on or off campus.

Entertainment

When I'm ready to relax, my MacBook easily does double duty as a TV—though admittedly a small one. And thanks to the Internet, I have a ready stream of content that doesn't cost a thing.

Since I don't plan on getting up every time I want to change songs or watch a video, a $19 Apple Remote (www.apple .com) is a necessity.

Of course, I'll need something to watch on my Mac, which brings me to Hulu. Hulu is like YouTube for mainstream TV shows and movies. Now with the free Hulu Desktop client (macworld.com/5191), you can watch *The Simpsons, The Daily Show with John Stewart,* and full-length films in full-screen view on your Mac. Bonus: you can control Hulu Desktop entirely with an Apple Remote, something you can't do with Hulu.com.

Adding the perfect yang to Hulu's yin, Boxee (macworld.com/5192) is a more general media-center application. While Boxee streams some big-studio content, its real appeal is in all the other Internet media it works with—MTV music videos, Pandora streaming radio, Netflix, MySpace Video, and much more. It can also play your local music and videos— all for the low, low price of free. And you can control Boxee with an Apple Remote, just as you can Hulu Desktop.

A Mac can't serve as a great portable TV without a decent set of speakers. I went with the JBL Duet II (www.jbl.com) speakers from Amazon for $52.64. They won't rattle the walls, but they get a good range of sound for the money.

Long-Distance Connections

For keeping in touch, I wanted something that would offer me both video and voice chats. After looking around, I chose a Skype Unlimited plan (www.skype.com) for $30 per year (this price is available once you go to checkout). I can make as many calls as I want from my MacBook to

family and friends, even if they don't use Skype. The service also includes free video calls to anyone who uses Skype.

I also splurged on Cosmic Machine's EventBox (thecosmicmachine.com), which acts as a one-stop social-networking shop. It might seem weird to pay $15 for social networking software, but EventBox lets me use Twitter, Facebook, Flickr, Digg, Google Reader, and Reddit all from one beautiful application.

Live Long and Study

I'm pretty happy with this setup. It gives me everything I really need without feeling skimpy. I'd prefer a bigger screen and a gadget like the EyeTV for watching live TV programs. But considering how little downtime I'll have, those luxuries can wait until my budget graduates.

David Chartier graduated from the University of Colorado at Denver in 2008. He writes about technology for publications such as *Macworld, Wired,* and Ars Technica.

Solve Printing Woes

Here's how to troubleshoot a printer that just won't print **BY TED LANDAU**

Printing a document is usually one of the easiest things you can do on a Mac. Select File ▶ Print, and you're pretty much done—that is, unless your printer refuses to print. Restocking the printer's paper tray will often solve the problem, but when obvious solutions like that don't work, figuring out what to do can be a difficult and time-consuming troubleshooting task. Here are some frequently asked questions and the simple—and not-so-simple—answers that will get your printer moving again.

Q: My printer completely stopped printing. What should I do?
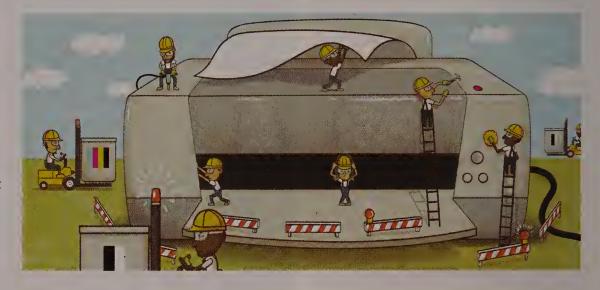
A: The best thing to do is to start with the basics:

Check the Power Make sure your printer is turned on and powered up.

Check the Paper Make sure you have paper in the paper tray. Typically, if there's no paper, you'll see an alert on either your Mac's display or the printer's LCD panel. Check the printer even if no error message pops up on your screen.

Check the Connection Check that the cable (probably USB) connecting the printer to your Mac or router is plugged into the appropriate port. If necessary, try a different USB port.

Check What's Selected If you have more than one printer connected to your Mac, make sure that you've selected the one you want in the Print dialog box's Printer pop-up menu. For example, if you've selected a printer that's currently

turned off, nothing will happen (see "Select the Correct Printer").

Tip If subsequent visits to the Print dialog box reveal that the Printer pop-up menu has reverted back to the wrong printer, go to the Print & Fax system preference. From the Default Printer pop-up menu, select your desired printer (see "Determine the Default").
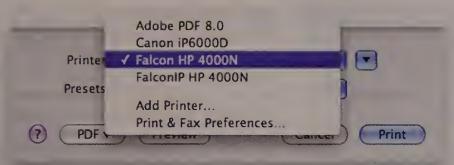
Check for Ink Issues If the printer's ink or toner is low, replace it. Low ink or toner is much more often a problem with inkjet printers than with laser printers. Making matters worse, many inkjet printers are notorious for not printing at all when even one of their multiple ink cartridges is empty. In other words, if your printer is out of yellow ink, you may not be able to print a black-and-white text-only document.

When your printer's ink needs to be replaced, you should get an alert message on both your Mac and the printer's display. If you don't see a warning but you still suspect a problem,

select your printer in the Print & Fax system preference, click on Options & Supplies, and then click on the Supply Levels tab for information.

You might see only an "Information Not Available" message. In that case, use Spotlight (⌘-spacebar) to see whether your printer came with its own utility. (For example, I searched for *Canon* on my Mac and found the Canon IJ Printer Utility located in my /Library/Printers/Canon/BJPrinter/Utilities folder.) Try launching the utility directly.

Note that printer utilities typically don't work if a printer is connected to a Mac over a network—for example, through an AirPort base station. To work around this, you'll need to temporarily connect your printer directly to one of your Mac's USB ports.

Tip A message that says you're low on ink may be incorrect. In particular, if you haven't used the printer for a while, the problem may be that the print head's nozzles are clogged. To check for

this, and hopefully fix the problem, clean the nozzles with the appropriate feature in the printer's utility. (Look in the manual that came with your printer to find out how to do this.)

Q: I checked all the basics, but I still am unable to get anything to print. I did notice that a Dock icon for my printer is bouncing up and down. What should I do now?

A: That Dock icon represents your printer's queue (in other words, the list of jobs waiting to print). You might also see a yellow triangle icon containing an exclamation mark. This alert indicates that the printing process has gone awry.

To find out more, click on the printer's Dock icon. The Print Queue window should open and, with luck, contain a message that describes the cause of the printing failure (see "Errors Explained").

If the message refers to your paper tray or ink levels, follow the afore-mentioned instructions for resolving those problems. If the message offers other clear advice (such as to click on Resume), follow it.

Delete Old Jobs and Reset Otherwise, select the name of the print job in the Print Queue window and click on Delete in the toolbar. If you see older jobs listed here, delete them too. When you're done, the status message in the Print Queue window should say "Printer Ready."

As an extra precaution, turn your printer off and back on again. This "resets" the printer, potentially correcting any trouble on the printer's end. Now go back to your application and try printing

the document once more.

Check the Error Log If that doesn't do the trick, select Printer ▸ Log & History while the Print Queue window is open. This launches Console and takes you directly to the printer error_log file (in your hard drive's /var/log/cups directory). The messages in this log, while often beyond the understanding of mere mortals, occasionally manage to point to the precise cause of your problem.

For example, the log once identified an improperly installed ink cartridge in my inkjet printer. I removed and

reinstalled the cartridge—printing problem solved!

Tip To open a printer's Print Queue window at any time, even if its icon is not in the Dock, go the Print & Fax system preference, select the printer's name, and click on Open Print Queue.

Q: The printer icon showed up in the Dock, but it's not bouncing. When I go to the Print Queue window, the status message seems to be stuck at "Connecting." What does this mean?

A: When you get stuck at the "Connecting" message, your Mac is probably unable to locate the printer. We've already covered the simplest reason for this: the printer isn't turned on. Make sure it is. Also make sure that your printer is connected properly and

CHECK IT OUT

One-Stop Social Media

With all the social-networking services out there, you can easily find yourself spending more time switching between Web sites than actually using them. Rather than jumping back and forth, save yourself some effort by using a desktop program that brings your social network to you. There are many good programs for managing specific networks, including Iconfactory's $15 **Twitterrific** for Mac (♦♦♦♦½; macworld.com/4924) for Twitter feeds, and Infinite Sushi's free **1001** (macworld.com/5126) for Flickr feeds, but my favorite is Cosmic Machine's $15 **EventBox** (thecosmicmachine.com). This program, which is still a beta release, not only lets me follow what's going on with several of my favorite social networks at once, but also allows me to view RSS feeds, thus eliminating the need for yet another application on my Mac.
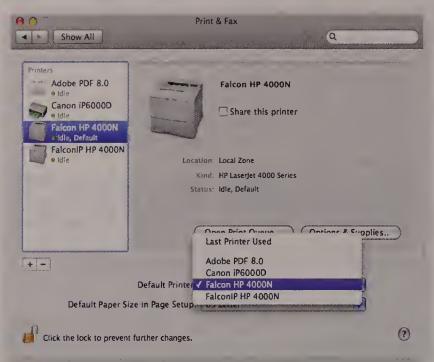
EventBox puts everything in a single window, with your networks listed in a source column to the left of the content-viewing area. To view any particular network, you simply click on its icon. To get a quick overview, you can use smart folders to show all unread activity, favorites, or recent activity at once.

The Facebook module lets you view your friends' status updates and photos, as well as upload your own. The Flickr module acts in much the same way, allowing you to view and upload images to your account, as well as see comments made about your photos. You can enter your favorite RSS feeds manually or, if you use Google Reader, have them imported automatically, so that you can keep up with all your favorite blogs in one place. Also, EventBox integrates with Reddit and Instapaper.

The crowning achievement of EventBox is how it works with Twitter—it's one of the most comprehensive programs available for the service. Viewing tweets, @replies, and direct messages is just the beginning. EventBox allows you to shorten URLs. It also lets you follow and unfollow, retweet, and search through tweets. And its smart folders make organizing your Twitter stream easy.—JAMES DEMPSEY

Determine the Default If the wrong printer keeps showing up in the Print dialog box, make sure you've designated the printer you want as your Default Printer in the Print & Fax system preference.

that there isn't a paper jam. If your printer is in some sort of "offline" state (a message on the printer's display will typically tell you if this is the case), turn it off and then back on again.

Prevent Shared-Printer Problems If you share your printer over a network, you need to perform some other quick checks. First, go to the Mac that's connected to the printer and confirm that the Mac is on and not asleep.

Next, open System Preferences on that Mac and take a look at the Sharing system preference. Confirm that the Printer Sharing option is enabled. Next, look at the Print & Fax system preference and make sure the Share This Printer option is enabled.

Beat Wireless Woes If the printer is connected to your Mac over a wireless network, make sure that your computer and the printer are on the same network. For example, if you inadvertently connect to your neighbor's password-free network, your printer will not show up.

More generally, confirm that your wireless network is functioning properly. To do so, go to the printer's Print Queue window and select Printer ▸ Network Diagnostics.

If everything appears to be OK, make sure the Mac knows that the printer is connected. To do this, launch System Profiler (in /Applications/ Utilities) and go to the relevant section for your printer's type of connection. For example, for a USB-connected printer, go to the USB section.

If you don't see your printer listed, the problem may be at your Mac's end of the chain. Restart your Mac and check System Profiler again.

If the printer still doesn't appear, you may have a hardware problem. For example, one of your USB ports could be malfunctioning or your printer could be broken. To zero in on the cause, try general troubleshooting techniques. For example, switch the printer to a different USB port. Also try logging in to a different user account to see if you can print from there.
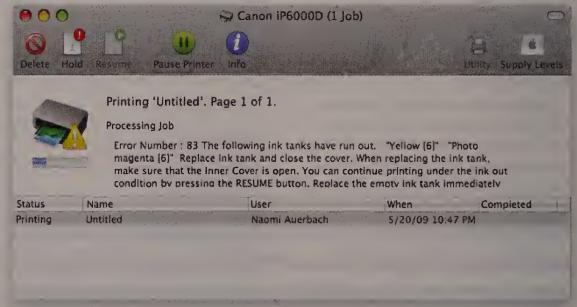
Q: Forget the Print Queue window; let's back up to the Print dialog box. My printer is not listed in the Printer pop-up menu at all. How do I get it to show up?

A: On rare occasions, for reasons often only known to the Mac gods, a printer will vanish from this menu listing, even though it was present and accounted for the day before. One known instance when this can happen is after a user reinstalls or upgrades to a new version of OS X.

All you usually need to do is select File ▸ Print, click on the Printer pop-up menu, and then select Add Printer. This opens a window in which you should be able to find your printer. Simply select your printer and click on Add. You can also access the Add Printer window by clicking on the plus-sign (+) button in the Print & Fax system preference.

If your printer does not appear in the Add Printer window by default, you may need to select a different option from the window's toolbar. For example, for a Bluetooth-connected printer, click on the Bluetooth icon.

Tip You can sometimes solve a variety of printing problems by deleting your printer and then adding it back in the Add Printer window, even if you see it listed there correctly. (See "Remotely Fixing the Family Printer" [macworld .com/5123] for a description of how to remedy this problem.) To do this, first delete the printer—select its name in the Print & Fax system preference and then click on the minus-sign (–) button. Then add the printer again as described above.

Errors Explained The Print Queue window is often your best resource when you want to find out what went wrong with your print job.

Q: I tried to add my printer but got this message: "An error occurred while trying to add the selected printer." What now?

A: It may be time to reset your printing system. To do this, go to the Print & Fax system preference. Control-click on the Printers list. Then, in the contextual menu that appears, select Reset Printing System.

According to this Apple support article (macworld.com/5124), this last-resort nuclear option will delete all printer queues and jobs, reset all printer settings to their default by deleting configuration files, and perform a permissions check on the /tmp directory.

In other words, you'll have to set up all your printers again as you did when you first connected them to your Mac. With a bit of luck, however, your printing problems will disappear.

Q: Nothing you've advised so far has solved my printing problem. What else can I do?

A: When all other options fail, give Fixamac's $30 Print Therapy (macworld.com/5125) a try. This program is chock-full of features. It will check and repair permissions settings for virtually every print-related file on your Mac, delete temporary cache and spool files from the /var/spool/cups directory, and restart the cupsd process.

The last two items in this list refer to fixes to the CUPS (Common Unix Printing System) software that underlies all printing on a Mac. Any of these actions may jump-start a stalled printer.

Tip Advanced users can tinker with CUPS directly, either by using commands in Terminal (/Applications/Utilities) or via the CUPS Web interface. To access the CUPS Web interface, type the address `http://127.0.0.1:631` into your browser's location bar. ⊗

When he isn't Twittering (@tedlandau), Senior Contributor **Ted Landau** is busy working on the third edition of *Take Control of Your iPhone* (www.takecontrolbooks.com).

TRY THIS

Format Word Tables to Highlight Your Data

Most of us know that formatting a table's data, cells, and borders can *potentially* help readers grasp what a table is trying to say. But that doesn't mean we know the best way to make it happen. When you need to create tables that contain mostly text, or when you want to customize a table's formatting in many ways, Microsoft Word (●●●½; $400 as part of Office 2008; macworld.com/3345) is often easier to use than a spreadsheet program such as Microsoft Excel.

Word Table Basics

If you have the Standard toolbar visible (View ▸ Toolbars ▸ Standard), you can use the Tables button to create a table in Word. Click on it and then drag across the palette that appears to choose the number of cells your table will have. You're not limited to the 4-by-5 palette that shows up initially; if you keep dragging, the palette gets bigger. Just click on the bottom right when you reach the correct size.

Another option is to select Table ▸ Insert ▸ Table. In the Insert Table window that appears, you can type in the number of columns and rows, as well as choose AutoFit behaviors (for example, whether your table cells have a specific width, or whether they adjust to fit to their contents or your window). When you've made your selections, click on OK, and Word will generate your table. Click in a cell and start typing to add data.

Formatting Options

A basic Word table matches your current style (so, for example, the font will be Cambria if you're using Word's default Normal style). You'll see no bold or italic type. Slim black borders lacking color or texture frame the cells. It's easy to make simple formatting changes. For instance, you can select some cells (such as a header row) by clicking in a cell and dragging; then click on the Bold, Italic, Underline, or Font Color button in the Formatting toolbar (View ▸ Toolbars ▸ Formatting).

Table AutoFormat Options But there's much more you can do to make your tables stand out. Start by checking out Word's AutoFormat options for tables. These varied AutoFormat designs are good if you need some inspiration. Select the cells of your table, and then choose Table ▸ Table AutoFormat. The window that appears gives you a number of preset formatting options, such as Simple, Classic, Color, Grid, and List. Scroll through the list in the Table AutoFormat window to see the previews. If you find a format you like, select it. Deselect any options (borders, shading, font, color, and so on) that you don't want to use before clicking on OK.

Formatting Palette If you want more power over your table's details, use Word's Formatting Palette. Choose View ▸ Formatting Palette, and then expand the Borders And Shading section of the palette. From here you can change borders, as well as apply colors to individual cells.

To work with your table borders, select the cells you want to change, and then select the Type menu. Word shows you various options for how you can apply borders to your table. Click on the square you prefer in the palette in order to apply border changes. You can also change the colors of your borders, their weight (thickness), and style (solid or dashed lines, and more) by changing the options in other sections of this palette.

One useful way to make data stand out is to change the color of key cells—showing losses in red in a profit-and-loss table, for instance, or using a color to highlight dates, names, or other data. Select a cell or cells that you want to fill with a color, and then choose a color from the Formatting Palette's Fill Color menu. Click on the menu to see common colors, or click on More Colors to access the standard Apple color picker and choose any color you want.—KIRK MCELHEARN

Rip and Burn CDs Smarter with iTunes

Import CDs faster and burn intelligently with these tips and tricks **BY KIRK MCELHEARN**

Whether you need to import your music from physical CDs into your Mac, or create audio CDs or backup discs from music you've already ripped or downloaded, iTunes has you covered. But your optical drive, system configuration, and iTunes settings can make a big difference in how well the whole process works.

What Affects Ripping Speed

There are two main variables that affect the time it takes to rip CDs: your optical drive and your processor(s). The speed of the former has the greatest effect on CD ripping. Ripping speed is shown in iTunes, at the top of the window, as an "×" speed (1× is about 150 KBps, or the speed at which data is read when listening to an audio CD). I achieve about 5× to 20× on my Mac mini, and these numbers increase as ripping progresses. That's not because iTunes gets better as it goes on; rather, because of the way CDs and drives work.

When you copy data from CDs, they spin at a constant speed, or "constant angular velocity." Unlike LPs, which are read from the outside in, CDs are read from the center to the edge. Because the speed is constant, less data is read at the beginning of the CD than at the end, hence the increase in data throughput during the ripping process.

I recently downgraded from a Mac Pro to a Mac mini, and my only lament in doing so was the pokier speed of the mini's internal SuperDrive, which reads CDs at up to 24×. Because the Mac Pro can hold a second optical drive, I added a 52× CD drive, which made ripping CDs in iTunes very quick: I got up to 40×, compared with a maximum of 20× on the Mac mini.

Getting Up to Speed

There are a number of ways you can speed things up:

Get a Faster Drive The easiest way to improve the speed of data input is to use a faster drive. SuperDrives tend to be very inconsistent—when I ripped a box set of Schubert piano sonatas with the Super-Drive in a Mac mini, for example, the ripping speed varied by disc.

If you rip a lot of CDs, or are just getting around to ripping a big collection, you may want to buy a second internal drive (if you have a Mac Pro) or an external drive that's faster than what came in your Mac. You can get external drives that read CDs at up to 48×, or internal media drives that read CDs at up to 52×. An external FireWire/USB drive will set you back as little as $70 and an internal drive can be had for just over $30 from outfits such as Other World Computing (eshop.macsales.com).

Regrettably, you won't get the drive's maximum speed. With a 52× drive, I got up to 40×, meaning that near the end of a CD, iTunes would show throughput of

around 40×. But this speed increase is relative at the beginnings of CDs as well. Overall, with a drive like this you'll rip perhaps twice as fast as with a stock SuperDrive. (The difference between the maximum read speed of 52× and iTunes' processing speed of 40× means that the processors—or the way iTunes uses them—can't keep up with the data.)

Don't Tax Your Processor The other variable that affects ripping speed is your processor(s). With the Mac Pro, iTunes never uses more than 100 percent of CPU time (meaning 100 percent of one core, not of the four available cores; so that's about one-fourth of the maximum). With the Mac mini, I get about the same processor hit: a maximum of around 100 percent (or half of what the Mac mini can handle). With a faster Mac, only the most processor-intensive operations—such as converting video or editing high-end graphics—will slow down ripping. But it's a good rule of thumb to avoid using other programs that hit the processor hard when you're

ripping CDs, as that will slow down iTunes' ability to convert music files.

Watch for iTunes' Slowdowns iTunes itself can affect your ripping speed, too. Many users report faster or slower ripping speeds as new versions of iTunes are released. One setting that can have an effect is Use Error Correction When Reading Audio CDs, which ensures that every bit is read correctly, using error correction to "fix" read problems. To see if you're using this setting, select iTunes ▶ Preferences, click on General, and then click on Import Settings. I always leave this setting selected to make sure my rips are as reliable as possible, but in some cases it can slow down importing.

Burn the Right Way

If you haven't explored iTunes' disc-burning options, you may be unaware that iTunes can burn more than just music CDs. In iTunes 8 and later, when you select a playlist and then click on the

Burning for Backup When you want to back up your iTunes content, don't burn it as an audio CD—use the more compact Data CD Or DVD option instead.

Burn Disc button at the bottom of the iTunes window, you'll see three burning options. Each one can be useful,

depending on what you want to burn.

Explore Audio CD Options Audio CD is iTunes' default option, the one you use

for burning CDs to play in a CD player such as the one attached to your stereo or in your car. Below this option, you'll see three entries: Gap Between Songs (followed by a pop-up menu that by default reads 2 Seconds), Use Sound Check, and Include CD Text.

If you're burning a CD of music that iTunes plays as gapless—The Beatles' *Abbey Road*, for example—choose None from the Gap Between Songs pop-up menu. When you do this, songs will play from one to the next without an extra gap. (If the songs include silence at the beginning or end, that silence will be maintained, as it's part of the original track.)

If you enable the Use Sound Check option, the disc will be burned with the Sound Check settings imposed by iTunes. (Sound Check attempts to balance the volume of the various tracks so that it's more or less consistent.)

And if you have a CD player that can read and display information from CDs—album, artist, and track titles, for example—and you'd like to view that information when playing the disc, enable the Include CD Text option.

If the playlist contains more tracks than will fit on a single CD, iTunes will offer to split the playlist across multiple discs—filling the first to capacity and then asking for additional discs as needed.

Get More Storage with MP3 CDs Some CD players can play tracks encoded in the MP3 format, and iTunes can create such discs for you. The advantage of these discs is that they can hold more than 12 hours of music. The original tracks must be in the MP3 format (any that aren't will be skipped when the disc is burned). As with burning audio CDs, if the playlist contains more tracks than can fit on the disc, iTunes will offer to write the remaining tracks to additional discs. The MP3 tracks will appear on the disc organized in folders, with each folder representing an album.
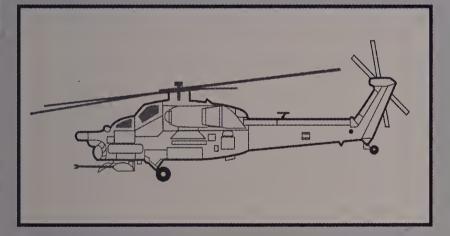
Back Up with Data CDs or DVDs Finally, you have the option to burn the contents of your iTunes playlist—audio as well as video—as a data disc. This is a great way to archive your content to protect it in case of hard-drive crashes and such. But if your player can handle both MP3 and AAC files on a disc, this option can be more useful than a standard MP3 CD (see "Burning for Backup").

This is also the only option that lets you burn to a DVD within iTunes. When you insert a blank DVD and click on Burn Disc—no matter which disc format you've chosen—iTunes will alert you that you've inserted a blank DVD and will give you the single option to burn the playlist as a Data DVD. Videos burned to DVD via iTunes can't be played back on a DVD player. These videos are for backup only. ⊠

Photographing Motion

Simple techniques that harness the power of motion blur   BY JENNIFER WILLS

With stunningly fast shutter speeds, today's cameras can stop almost any motion. But some subjects—such as race cars and babbling brooks—become more interesting when you *emphasize* their motion.

Usually, you indicate motion by blurring either the background or the subject of the photo. To do this, you have to take control of your camera's shutter speed, aperture, and ISO settings. Once you understand how these three settings work together, you can use them to convey almost any type of motion. And the best news is, you don't need a fancy camera to get the job done—any camera with a shutter-priority mode will work.

Managing Your Light

Motion blur is controlled by your camera's shutter speed, which is the amount of time the shutter stays open so light can hit the camera's sensor. If something in the scene moves while your shutter is open, it will blur in the final image. This means that slower shutter speeds generally show more motion blur.

To change shutter speed, put your camera in shutter-priority mode (often indicated by the letter S or a TV icon) or in manual mode. Shutter speed is expressed as a fraction of a second. The way this appears can vary from camera to camera, but typically a shutter speed of $1/60$ represents $1/60$th of a second, and a number without a fraction refers to whole seconds (so 2" is a two-second exposure). While the exact definition of a slow shutter speed depends on the situation, anything slower than $1/15$ usually qualifies.

Stream   A two-second exposure lets the water blur through the image.

As more light hits the sensor, you run the risk of overexposing the image. One way to counteract this is to adjust your camera's ISO to a lower sensitivity (for example, ISO 100).

You can also manage light by changing the aperture. This opening widens or narrows to control the amount of light that hits the sensor. If you're shooting in shutter-priority mode, the camera will automatically calculate an appropriate aperture for whatever shutter speed you've chosen (you'll usually get a warning if it can't achieve the setting). If you go fully manual and are getting too much light, you'll want to *stop-down*, which means choosing a smaller aperture. Because apertures are fractional, $f/2.8$ is a larger opening than $f/22$.

Even if you lower the ISO and choose the smallest aperture possible, you may still get too much light. In this case, you can use a neutral density filter. These glass or plastic discs typically screw onto your lens and reduce the light that reaches the sensor. They come in different values, offering anywhere from a 1 f-stop to a 10 f-stop reduction in light, and are sized for different lenses. They're worth the cost (prices range from $10 to $200), but if you're up a creek without a filter, try putting your sunglasses in front of the lens.

Standing Still

Once you understand the basics of getting a good exposure, you can begin experimenting. How you hold and move your camera while the shutter is open dictates the type of movement your shot will portray. Let's start with an easy scenario: keeping your camera steady as the subject—for example, a river—moves through the frame. When blurred, the

Mac Security Expertise Has a Name

Intego is the Mac Security Specialist

Intego has a full line of Mac security software designed to protect Macs from the dangers of the Internet. From virus protection to firewalls, from backups to data protection, Intego is the only company specializing in keeping Macs secure. With products designed for the enterprise, only Intego can offer the kind of security that today's businesses need.

Intego's Mac Security Solutions	
NetBarrier X5	Firewall, antivandal and privacy protection
VirusBarrier X5	Desktop antivirus protection
VirusBarrier Server	Antivirus protection for Mac OS X Server
VirusBarrier Mail Gateway	SMTP antivirus protection for Mac OS X Server
Remote Management Console	Remote management of Intego software
Personal Backup X5	Local and network backup solution
FileGuard X5	Protection for sensitive files
Personal Antispam X5	Antispam and anti-phishing protection
ContentBarrier X5	Lets children use the Internet safely

Mac Universal

moving water takes on a dreamy, fluid haze that can convey anything from a slow trickle to a powerful gush. The lighting and speed of the water will determine your exact shutter speed. A good starting point is your smallest aperture (f/22 on most cameras) and then a shutter speed of one second.

Keep in mind that when you leave the shutter open, you run the risk of introducing another type of movement: camera shake. To combat this, attach your camera to a tripod or place it on a solid surface and set its self-timer button to trip the shutter.

This technique is great for nighttime street scenes as well. Put your camera on a tripod and use a long shutter speed (try one second to start and an aperture of about f/5.6), and moving traffic will look like streaks of white and red. Review your results and then increase or decrease the shutter speed as needed. A slower shutter speed will produce longer streaks of light.

If you're using shutter-priority mode for nighttime images, you may find that the camera's auto exposure settings make the scene a little too bright. To convey clearly that you're shooting at night, you can darken the background by going to the exposure compensation feature on your camera and choosing –1 or –2.

Panning for Gold

Another way to show action is to keep the moving subject sharp while blurring the surrounding scene. This involves *panning*—following the subject in the viewfinder.

When blurred, moving water takes on a dreamy haze that can convey anything from a slow trickle to a powerful gush.

Say you're shooting race cars. Use a high shutter speed, and the car might look like it's parked on the track. Use a slow shutter speed, and the car will be a blur in your photo—good for some images, not for all. But if you use a shutter speed of around 1/125th of a second and move the camera in the direction in which the car is traveling, you blur not only the background but also the wheels.

Start by prefocusing on the area where the subject is going to be when it's in front of you. If you're in autofocus mode, point at the spot where the car will drive by. Press the shutter halfway and then swing the camera so that the subject stays in your viewfinder. When the car is in the prefocused area, press the shutter the rest of the way and continue following the subject through and beyond the shutter click.

This technique works best for subjects that are moving in a plane parallel to you. Bicycles and skateboards also make great subjects (start with a shutter speed of around 1/30th of a second). If you're having trouble panning the camera smoothly, use a tripod or monopod for more stability.

Stuck on You

Stick your camera on a moving subject, such as a bicycle, and the background will be blurred, while the object the camera is mounted on—bicycle handlebars, for example—will be sharp.

You can use a homemade clamp (macworld.com/5011) to attach a compact camera, or use a Joby Gorrillapod (www.joby.com). For heavier SLRs, use something made for the job, like a Bogen Manfrotto Super Clamp ($27.50; macworld.com/5012) or a Delkin Fat Gecko Camera Mount ($90; macworld.com/5013). Use the self-timer button to trip the shutter so you can steer safely.

Zoom Motion

Want to jump into hyperspace? Zoom your lens while using a slower shutter speed (start at around 1/15). Objects at the edges of the frame will appear to move toward the center of the frame. You can also try this with a slow sync flash that freezes the motion of the person you're photographing in the center while the background zooms away.

Trial and Error

With all of these techniques, finding the right settings will take some experimentation. Don't be discouraged if there's a high failure rate, especially in the beginning. When you get it right, the results will be worth the effort. ⊗

At the Track Panning the camera in the direction of the car during this 1/125th-second exposure blurred the background and foreground and gave a sense of motion to the wheels.

Jennifer Wills is a professional photographer and designer, and a cofounder of W+W Design (www.wplusw.com).

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Testing Your LAN's Speed

Is your network fast enough? Here's how to find out. BY GLENN FLEISHMAN

Everyone wants a faster network. Before you can speed up yours, you need to know how fast it's going now. But measuring network speed isn't straightforward.

Your network hardware may be rated to go 54 Mbps or 100 Mbps, but in reality your data moves at only a small percentage of that—often at no more than 50 percent. One reason is networking overhead—the administrative bits that ensure your data gets where it's supposed to go. Also, speeds are limited by the slowest component. If your computer can read data from your hard drive at only 50 Mbps, a 100-Mbps network can't move it faster than that.
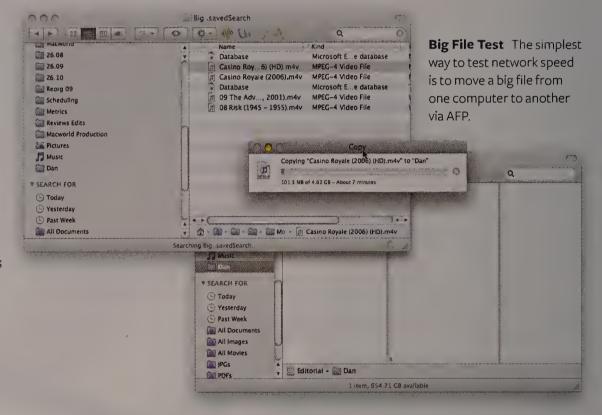
The three tests described here will show you both the potential and the real-world speed of your network, based on the protocols your network uses and the speed of your components.

All three tests are performed between two computers (I'll call them Computer 1 and Computer 2). Before you start, make sure that those machines are connected through the kind of network you want to test (usually Ethernet or wireless) and that you've selected that method in OS X's Network preference pane.

Test 1: AFP Speed

This test uses Apple Filing Protocol (AFP) to copy a large file between two computers. It shows both how fast AFP works on your network and how fast your hard drives can read and write.

First, select a large file—preferably one that's about 1GB in size—on Computer 1.Use Get Info in the Finder (⌘-I) to find its precise size in megabytes. Multiply that number by eight to convert that size

Big File Test The simplest way to test network speed is to move a big file from one computer to another via AFP.

to megabits. Then, get out a stopwatch or turn on the seconds display in the menu bar's clock (in the Date & Time preference pane, select the Clock tab and check Display The Time With Seconds).

Now, on Computer 1, in the Finder window's sidebar under Shared, select Computer 2. (If it isn't there, go to the Sharing preference pane on Computer 2 and select the File Sharing service.) Click on Connect As in the upper right of the window, and enter a valid user name and password for Computer 2. Mount a volume from Computer 2 by double-clicking on that volume's name. Making a note of the current time (including seconds), drag the large file from Computer 1 to Computer 2's shared volume to initiate a file transfer.

When that transfer finishes, note the concluding time. Subtract the finish time from the start time you noted earlier, and convert the difference to seconds. Finally,

divide the size of the file (in megabits) by the transfer time (in seconds) to get Mbps. That's your transfer speed.

Test 2: Hard-Drive Read/Writes

AJA Video Systems offers a free tool that is intended to check the video frame rates your drive can handle—but it can also be used to test network speed. Like the first test, it uses AFP to transfer data between computers. But because it lets you specify the size and number of files transferred, it can be more exact.

To start, download the AJA System Test (macworld.com/5127) to Computer 1. After installing and launching it, select its Preferences from the application menu and select Enable Network Volumes. In the Finder, mount Computer 2 and then select it from the Volume pop-up menu in AJA System Test. Select 1.0 GB from the File Size menu. Leaving other settings as they are and making sure there are no

other major operations on the network, click on Start.

The program will then write and read a 1GB file to Computer 2; it will report the results to you in Mbps. You can repeat the test with other machines on your network, or with other volumes.

Test 3: iperf

An open-source software tool called iperf can give you the best raw measure of network performance. It will show you the fastest rate at which your network can possibly perform, exclusive of network protocols or hard-drive speeds.

To start, you'll need to download and install iperf to Computer 1 (see "Getting iperf" for details). Next, on both computers, go to the Network preference pane and jot down the IP addresses assigned to all active network interfaces.

Choose one computer to act as a server (Computer 1) and the other to act as a client (Computer 2); you can reverse these roles whenever you like. On Computer 1, enter this at the command line in Terminal (/Applications/Utilities):

```
./iperf -s -K 1M
```

That **1M** parameter tells iperf to send test data in 1MB chunks. To test for smaller files, change that variable to something smaller, like **64K** (64KB). (File size can have a big impact on network speed: Moving 5,000 small files that add up to 50MB can take ten times as long as moving one 1GB file, because of the

inefficiencies of networking protocols.)

Next, on the command line of Computer 2, enter the following:

```
./iperf -c 10.0.1.100 -i 1
```

(**10.0.1.100** is the IP address of Computer 1 in this example).

Now iperf will flood your network with traffic and measure its speed. It will begin to report the speed of your network every second; after ten seconds, it shows the overall average. The advantage of getting those frequent snapshots is that they can help you isolate transient events that may be lowering your overall speed—like seeing 1 Mbps one second and 100 Mbps the next.

Interpreting the Results

Gigabit Ethernet should be able to deliver over 900 Mbps in raw throughput between two computers when measured through iperf; it will deliver far less through an AFP test. The reason: AFP has a high network overhead that reduces its throughput; 100-Mbps Ethernet should hit over 90 Mbps of raw throughput, and AFP can top out at about the same speed.

Wi-Fi can produce all kinds of speeds. If both computers are on 802.11n Wi-Fi using the 5GHz band, then each bit of data is transmitted twice (once to the base station from the client and once from the base station to the server); you should see as much as 50 Mbps of actual throughput. If one computer is on 802.11n in the 5GHz band and the other is on Gigabit Ethernet, you might see 150 Mbps in raw network speeds.

Numbers far below those indicate that something is wrong, and that it's time to start troubleshooting your network (macworld.com/5128). ⊗

Glenn Fleishman writes regularly about networking for *Macworld*. He has also written Take Control e-books (www.takecontrolbooks .com) about Back to My Mac, AirPort, Wi-Fi security, and file sharing in Leopard.

AJA System Test This downloadable utility really tests the speed of transfers between two hard drives—which can tell you a lot about real-world network performance.

The Paranoiac's Guide to Web Browsing

How one security expert stays truly safe online **BY RICH MOGULL**
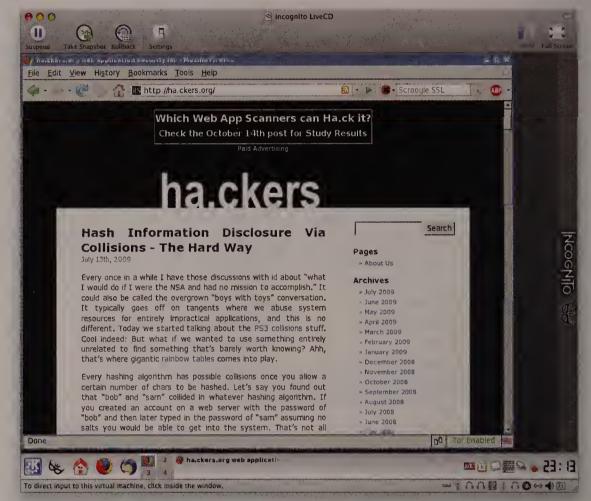
A s a security analyst and researcher, I often have to visit some of the darker corners of the Internet. To stay current on security issues, I must browse the sorts of Web sites no average person should go anywhere near—so I'm also far more likely to be targeted in an attack. That's forced me to develop a somewhat extreme approach to safer surfing.

Understand the Risks

Web browser attacks fall into two general categories. The first target your browser. They use deceptive Web pages or links to redirect you to undesired locations, to hijack browsing sessions, to download software to your computer, or to perform transactions (such as forwarding your Web mail to the attacker). Browser-specific attacks include cross-site scripting (in which attackers insert malicious code into a Web page you trust); cross-site–request forgery (in which the attacker inserts code in one Web page allowing him or her to send commands, in your name, to another page); and click-jacking (in which programmers insert hidden buttons on apparently legitimate pages, in the hope that you'll inadvertently click on them).

The other type of Web attacks exploit security flaws in your browser or its plug-ins (such as QuickTime or Flash) to attack your entire system. These attacks take advantage of buffer overflows and vulnerabilities that have long enabled viruses, worms, and remote attacks.

I use a multilevel strategy to protect myself from both kinds of attacks and to limit the damage if I do get attacked. That strategy begins with good password

Incognito Virtual Machine For the ultimate in safe browsing, run a browser in a different operating system from a live CD.

management; I rely on 1Password (●●●●½; macworld.com/3801) for that. But I go much further: I also use multiple browsers and even operating systems to keep myself as safe as possible. Even if you don't visit the kinds of sites I do, some of these precautions could be useful to you, too.

Multiple Browsers

My first line of defense is to use different browsers for different sites. That way, if an attacker compromises a Web forum that I log in to, he or she can't compromise my online banking from there, because I use a separate browser for that.

For general browsing and for commerce sites such as Amazon (www.amazon.com), I primarily use Firefox 3.5 (macworld.com/5172) configured with the NoScript (macworld.com/5173) plug-in. By default, NoScript disables Java, Flash, and other dynamic content that's often used in attacks. Because it's nearly impossible to attack a browser that doesn't run scripts or plug-ins, NoScript is extremely effective as long as I don't accidentally authorize anything malicious.

Because Safari is harder to lock down than Firefox, I use it for sites that are neither sensitive nor risky, such as Wikipedia (www.wikipedia.org), Pandora

Needs NoteBook
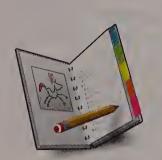
Has NoteBook
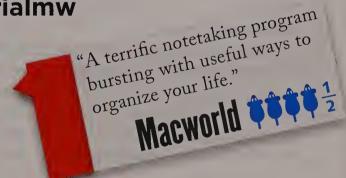
Class notes, rough drafts, web research, outlines, reminders — take control of it all with Circus Ponies NoteBook, the award-winning application for managing information. Get organized using a familiar notebook interface, with pages and tabs, sections and subsections. Create voice-annotated notes and review them from your computer or iPod. "Clip" web pages, e-mails, and other content to your Notebooks for later reference. Diagram and sketch when words won't suffice. Find anything instantly using NoteBook's patented Multidex™. Share your Notebooks as PDFs or as websites. And much more. NoteBook has everything students need to get organized for school.

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"A terrific notetaking program bursting with useful ways to organize your life."

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(www.pandora.com), and Apple.com (www
.apple.com). Under Preferences ▸ General,
I disable Open "Safe" Files After Down-
loading, and under Preferences ▸ Autofill,
I disable User Names And Passwords.

By default, both Firefox and Safari will
try to identify and avoid known fraudulent
sites using public blacklists. In Firefox, go
to Preferences ▸ Security ▸ Block
Reported Attack Sites; in Safari, go to Pref-
erences ▸ Security ▸ Warn When Visiting
A Fraudulent Website. I leave these
settings activated.

Dedicated Browsers
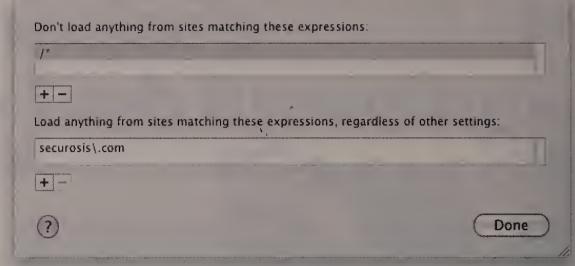
For riskier or more sensitive sites, I use
either a dedicated browser or a site-specific
browser (SSB).

By "dedicated browser," I mean a
regular Web browser that I use only for
one site. For example, I use OmniWeb
(♦♦♦♦½; macworld.com/3402) to manage
my company Web site and blog.

I've implemented rules in OmniWeb to
keep it from accessing any site outside my
corporate domain: In Preferences ▸ Ad
Blocking, I clicked on Edit The Blocked

OmniWeb Settings OmniWeb lets you create sophisticated rules regarding which sites the browser can and can't visit.

NoScript With the NoScript Firefox plug-in,
you get fine-grained control over when and how
Web-based scripts can run.

URLs List. In the top window that lists
blocked sites, I added a rule for /* to block
every Web site. In the bottom, trusted-sites
window (which overrides the blocked-sites
list), I added **securosis.com** to allow
anything from my site. Those windows
support complex regular expressions, so
you can create some sophisticated rules.

For really sensitive sites or sites that I
don't trust at all, I use an SSB. That's
essentially a stripped-down Web browser
that I can create in a few clicks. I created
one with the Prism (macworld.com/5174)
add-on for Firefox. (Go to Tools ▸
Add-ons ▸ Get Add-ons, search for
Prism, and then install it.) With Prism
installed, browse to that site and select
Tools ▸ Convert Web Site To Application.

This creates a browser application that
will work only with that site. Unlike a
dedicated browser, an SSB lets me
browse to other Web sites. But because
an SSB is a completely separate process,
I can restrict its Web access using the
Little Snitch (♦♦♦♦½; macworld.com/3693)
outbound firewall. If someone attacks
the SSB, they can't touch my other
browsers or steal my browsing history,
except for the SSB's.

Multiple Operating Systems

For really risky or sensitive sites (such as
my online bank), I go one step further: I
use entirely separate operating systems
running as virtual machines (VMs) in
VMware or Parallels.

For example, for online banking, I
use Microsoft Internet Explorer 8

running on the latest release candidate
of Windows 7. IE 8 on Windows 7 is
very secure—especially because I don't
use it to visit any Web sites other than
my banks, nor do I use the VM for
e-mail or other Internet activity. That
eliminates all possible browser attacks
(unless my bank itself is compromised);
an attacker would need to completely
take over my Mac in order to get my
banking information.
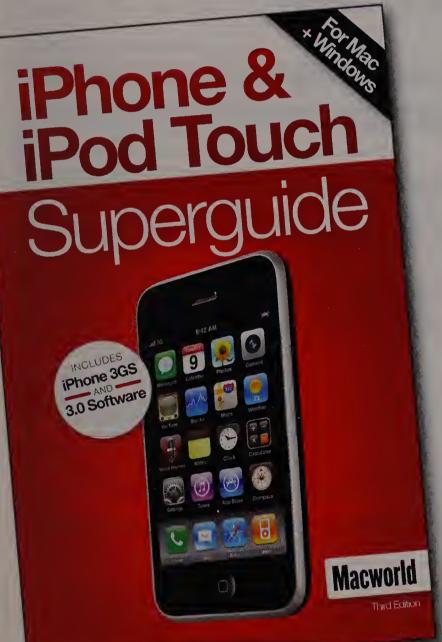
For maximum browsing security, I
use the Incognito (anonymityanywhere
.com/incognito) Linux live CD in a VM. A
live CD runs the OS from the optical
drive, without installing anything on the
hard drive. The VM runs everything in
memory without touching the local file
system (except for virtual memory). An
attacker could completely compromise
and control that VM, but he or she
couldn't touch anything else on my
system. The state of the VM is never
saved to disk, so all I have to do to return
to a pristine, clean image is to shut the
system down and reboot.

Granted, my chosen profession
requires me to take more precautions
than the average user. But these
tricks—NoScript, dedicated Web
browsers, SSBs, and virtual machines—
could still be useful for anyone con-
cerned about security. ⊠

Rich Mogull has worked in the security
world for 17 years. He writes for TidBits (db
.tidbits.com) and works as a security analyst
through Securosis.com (www.securosis.com).

Mac OS X Hints

The insider tips you won't get from Apple **BY ROB GRIFFITHS**
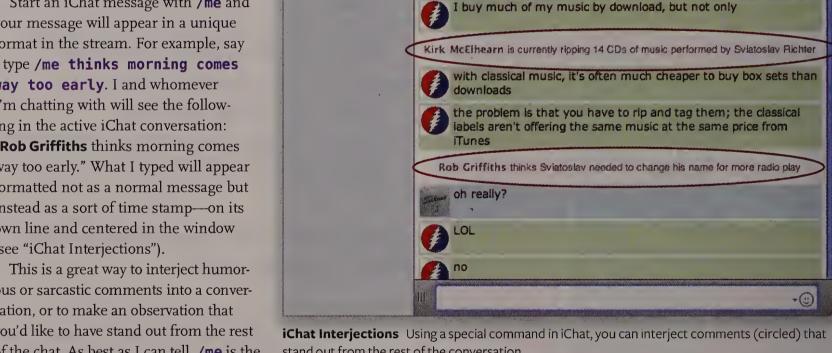
Try Fun iChat Formatting

If you use Apple's iChat day in and day out, you might appreciate a feature tucked into the version that came with OS X 10.5. iChat 4 supports the **/me** command from IRC (Internet Relay Chat), a protocol that predates iChat itself.

Start an iChat message with **/me** and your message will appear in a unique format in the stream. For example, say I type **/me thinks morning comes way too early**. I and whomever I'm chatting with will see the following in the active iChat conversation: "**Rob Griffiths** thinks morning comes way too early." What I typed will appear formatted not as a normal message but instead as a sort of time stamp—on its own line and centered in the window (see "iChat Interjections").

This is a great way to interject humorous or sarcastic comments into a conversation, or to make an observation that you'd like to have stand out from the rest of the chat. As best as I can tell, **/me** is the only IRC command that iChat supports.

Have a Hint to Share?

Go to MacOSXHints.com to submit it. This column was based on tips from Eric Magnuson, John Maisey, Julian Wegkamp, and anonymous contributors. Each month, the author of our favorite tip receives the *Help Desk* mug.

iChat Interjections Using a special command in iChat, you can interject comments (circled) that stand out from the rest of the conversation.

See Exact Time of an iChat Message

iChat 4 will, on its own, stick time stamps into your conversations at various times. But what if you want to know the exact time—to the second, even—that you sent or received a certain message?

You can find out. To do so, hover your cursor over any portion of the message (it must be over the text in the message, not the icon next to the message or the box that contains it). In a second or two, a floating tooltip will appear, showing both the date and the exact time that par-

ticular message was sent or received. (I'm sure this will come in handy in a detective show sometime soon.)

Combine Multiple Mail Messages for Forwarding

Need to forward a bunch of e-mail messages to the same person? You don't have to do them one by one. In Apple's Mail, select all of the messages you'd like to forward, using the ⌘ (for single messages) or Shift (for multiple contiguous messages) key as necessary. Then

select Message ▸ Forward (or press ⌘-Shift-F). A new message window will appear with the contents of every selected message, including their basic headers, and the words "Begin forwarded message" above each one. Fill in the recipient and subject, click on Send, and you're done.

If you'd also like to conserve paper when you're printing multiple messages, you can use Apple's Automator (/Applications) to combine multiple Mail messages for printing, as I described in a 2006 OS X Hints blog entry at macworld.com/5084.

Use the Keyboard with Safari 4's Search Box

In Apple's Safari 3 (and earlier versions of the browser), you could use the up (or down) arrow key to quickly move your cursor to the start (or end) of text in the Google search box. This made it really easy to add new terms to something you'd already typed.

In Safari 4 (❂❂❂❂½; macworld.com/5043), however, the up and down arrow keys have been repurposed—they now scroll through the suggested matches for your Google search terms. As it turns out, you can still jump around the Google search box using the keyboard. All you need to do is add the ⌘ key to the up or down arrow key, and you'll jump to the start or end of the text in the search box.

Learn Essential Text Shortcuts

When you're typing text, it's annoying to have to reach for the mouse—your hands are busy on the keyboard, after all. Instead of mousing, try these keyboard shortcuts to help with editing. You can use the ⌘-Up Arrow (or ⌘-Down Arrow) trick to jump to the beginning (or end) of text in almost any application (notable exceptions include Microsoft Office 2004 and 2008). But that's just the beginning.

Press and hold the Option key while pressing and releasing the up (or down) arrow, for instance, to move up (or down) through a TextEdit document, one paragraph at a time.

Pressing ⌘-Left Arrow (or ⌘-Right Arrow) jumps to the beginning (or end) of a line of text; Option-Left Arrow (or Option-Right Arrow) jumps backward (or forward) one word at a time.

You can add the Shift key to these shortcuts as well. For instance, Shift-Option-Up Arrow selects multiple paragraphs in your document, starting where your cursor is and moving upward.

Try Old-School Text Shortcuts

One of the first text editors was **emacs**, a Unix-based program that's still available (via Terminal) in OS X today. The program has a set of defined keystrokes that you can use to move around text and perform simple edits. The secret is that these keystrokes work in many applications in OS X, not just in **emacs** in Terminal. A guide to **emacs** editing shortcuts at macworld.com/5085 contains a long list.

I suggest sticking to the commands you see in the list that begin with C-, which is shorthand for the Control key. Only the movement and editing keys will work. For example, try Control-T in the midst of a word in Safari's Google search box, and you'll see the two adjacent characters swap positions. Control-A will move your cursor to the beginning of a line, Control-E moves it to the end, and Control-K erases all text from the current cursor position to the end of the line.

If you're going to experiment with the **emacs** shortcuts to find useful ones, I suggest doing so with a TextEdit document that you don't care too much about. That way, you can learn without fear of accidentally destroying anything important. ⊠

POWER TIP OF THE MONTH

Set Default Length for New iCal Events

One of my pet peeves with Apple's iCal is that new events are always created with a duration of one hour. There's no way to change this in iCal's preferences, and if you prefer 30 minutes, 15 minutes, or some other period as a default for new events, it's a pain to change each time. There's a relatively easy fix for this problem (although it does require a quick trip to Terminal). Note that this solution has been tested only with iCal 3.0 (which comes with OS X 10.5).

Quit iCal if it's running, open Terminal (in /Applications/Utilities), enter this command, and press Return. (Copy and paste all these commands from macworld.com/5087.)

```
defaults write com.apple.iCal 'Default duration in minutes
for new event' 15
```

Change the number 15 to whatever duration you'd prefer to use; it's specified in minutes. You can even use zero (0), if you want, to create new events with the same start and end time. Note that you will see just the Terminal prompt after you press Return.

Launch iCal and create a new event, and it should have your specified duration. If you want to go back to the one-hour default, quit iCal, return to Terminal, and enter this command:

```
defaults delete com.apple.iCal 'Default duration in
minutes for new event'
```

Mac 911

Solutions to your most vexing Mac problems BY CHRISTOPHER BREEN

Move Mail's Preview Pane

Q: Is there an application that allows you to put Mail's preview pane on the right side of the window?

Art Martelli

A: If you prefer to view your Mail messages on the right rather than at the bottom (Mail's default), check out Aaron Harnly's free Letterbox (macworld .com/5129) or Dane Harnett's WideMail (payment requested; macworld.com/5130). Not only do these Mail plug-ins allow you to shift the preview pane, but they also perform some additional tricks (see "Move Mail's Preview Pane").
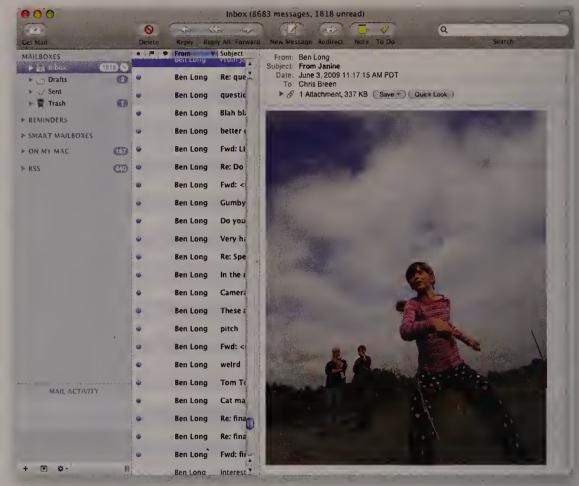
With Letterbox, you can tweak the appearance of your message list by choosing to have alternating rows appear in color or adding line dividers between rows. And you can set the preview pane divider line to normal or hairline.

WideMail offers the same customizations as Letterbox, along with a few more options. You can choose to show or hide relative dates (Today, Tomorrow, or Yesterday, instead of specific dates), add vertical as well as horizontal lines between rows and columns in your message list, change the color of those grid lines, and alter the spacing between rows.

Split and Archive iPhoto Libraries

Q: My hard drive is full. To make room, I would like to organize my

Move Mail's Preview Pane If you dislike how Apple Mail displays your e-mail messages by default, Mail plug-ins Letterbox and WideMail let you shift the preview pane to the right side of the window.

iPhoto pictures by year, move the older ones to an external hard drive, and remerge everything when I get a new Mac. How can I do that?

Via the Internet

A: You have two tasks to perform. The first is to sort your photos by year, and the second is to copy those pictures to a new library and delete them from the original library.

To organize your images by year in iPhoto '09 (♦♦♦♦; $79 as part of the iLife '09 suite; macworld.com/4319), choose File ▸ New Smart Album. To find all pictures from the year 2005, for example, use the pop-up menus in the resulting

window to create the following condition: Date is in the range 1/1/2005 to 12/31/2005. Give the smart album an intuitive name—something like '2005'—and iPhoto will pull all of the images from that year into your album.

Now tool on over to Fat Cat Software and pungle up $20 for the excellent iPhoto Library Manager (macworld .com/5131). This utility makes it easy to create multiple iPhoto libraries and copy content between them. In iPhoto Library Manager, click on the New Library button and give it a name, such as 'Pictures from 2005'. Save that library to your external hard drive. Now select your current iPhoto library from the list on

the left, locate your 2005 smart album from the list of albums in the middle, and drag it to the library you just created (see "Manage Your iPhoto Library"). iPhoto Library Manager will copy the images to the new library, along with their tags, keywords, and metadata.

Once the images have been copied, click on the radio button next to your original library in the iPhoto Libraries list and then select Launch iPhoto from the toolbar. When iPhoto starts up, it will contain the contents of your original library. Highlight the smart folder you created ('2005', in our example), press ⌘-A to select all of the images in it, hold down the Option key, and choose Photos ▶ Move To Trash. Control-click on the Trash in iPhoto's Library pane and choose Empty Trash.
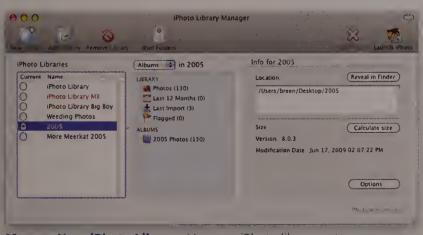
When you get your new Mac, you can use iPhoto Library Manager to easily restore the images from your external drive. Open the library that contains your archived images and use the process described above to copy them to the Mac's iPhoto library.

Understand Upgrade Options

Q: If I upgrade my iMac from Mac OS X 10.4 to 10.5, will I have to reinstall Apple's AppleWorks and iWork?
Lois Roach

A: You shouldn't have to reinstall AppleWorks or any version of the $79 iWork (www.apple.com/ilife)—provided you choose the correct setting during your upgrade to Leopard. Insert your Mac OS X 10.5 disc, open it, and double-click on Install Mac OS X. Once the system

Manage Your iPhoto Library Has your iPhoto library gotten way too big? You can easily split and manage iPhoto libraries with iPhoto Library Manager.

Bugs & Fixes BY TED LANDAU

Revive iLife Have your iLife programs stopped launching? If you've recently reinstalled Mac OS X using the Archive And Install option—or moved files from an old Mac with Migration Assistant—this may be the cause. The solution: reinstall the $79 iLife suite (either version '08 or '09; www.apple.com/ilife) from disc. Once it's reinstalled, select Software Update from the Apple menu to upgrade the programs to their latest versions. Make sure to install the iLife Media Browser update.

Improve iPhoto Web Pictures When you upload iPhoto images to your MobileMe Gallery, you'll find that your pictures don't look as good once they are downloaded on another machine—even when you set the Download Quality menu to Actual Size. Although iPhoto retains the same resolution, it compresses images, resulting in lower quality. If you update iPhoto to version 8.0.2 or later, any pictures that you upload as actual-size images should be close, if not equal, to the size of the original (thanks to improved compression). If you want to post a true, full-size image, log in to MobileMe (www.me.com), select Gallery, choose an album from the sidebar on the left, and click on Upload.

Fix Crash-Causing Plug-ins With Mac OS X 10.5, Apple added a helpful troubleshooting feature: when a program crashes due to a plug-in problem, the "unexpectedly quit" dialog box actually names the culprit. However, a Spotlight search may not find that plug-in, because it could be buried within an application package. If that happens, try this: launch Console (in /Applications/Utilities), navigate to Log Files ▶ CrashReporter, locate the relevant crash file, and search for the plug-in name. Once you've found the plug-in, you can update or delete it.

Senior Contributor **Ted Landau** is the founder of MacFixIt (www.macfixit.com). Share problems at bugs@macworld.com or on Macworld.com's Mac 911 forum.

restarts, you'll find three installation options—Upgrade Mac OS X, Archive And Install, and Erase And Install.

The Upgrade Mac OS X option tweaks and updates the current OS X installation (including programs that come with the system, such as Mail and iCal). Because AppleWorks and iWork are not included with OS X, they're untouched.

Nevertheless, ignore this option and select Archive And Install instead (make sure you select the Preserve Users And Network Settings check box underneath). When you choose this setting, Mac OS X installs a brand-new copy of its system files, moving the old versions to a folder called Previous System. I find this to be a better way to go than the Upgrade option, because new system files seem to make for a more stable Mac. With Archive And Install, AppleWorks and iWork should open just as they always have, as long as you've enabled the Preserve Users And Network Settings option.

The Erase And Install option wipes out the data on your startup drive (including applications) and installs everything fresh. If you choose this option, you'll lose your copies of AppleWorks and iWork, along with every other bit of information on your Mac. Only select this if you want a completely clean start. ⊠

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Cutting the 'Apple Tax'

The cost of computing goes way beyond the price tag

By now, you've probably heard (from Microsoft and its supporters) about the "Apple tax"—the extra money you supposedly pay for a Mac compared to a Windows PC. (Some prefer to call this "the Microsoft discount"—the rebate you get in exchange for putting up with Windows.)

The truth is, if you're talking purely about point-of-sale prices, at times you *do* pay more for a Mac. (Though that difference is often less than you might think once you really configure the computers comparably.) But is the price tag all that you should take into account?

Not Commodities

Let's say you're shopping for a new refrigerator. You don't just compare specs and price tags. You go look at the fridges in person; you see how the doors open; you inspect the layout of the shelves, drawers, and racks; and you check out the controls and settings. In short, you try to find a model that fits your kitchen and your preferences; not all refrigerators will fill the bill.

Or say you're buying a bicycle. Most bikes have essentially the same features—a frame, two wheels, brakes, and so on. Yet the quality of those components can vary greatly. Some bikes have additional features that make using them a better experience and that increase their reliability and performance. And each bike has a specific geometry that defines how well it fits each rider.

In other words, for most major purchases, buyers look for the best product they can afford that *works for them*. Sometimes that means spending more—in some cases, a *lot* more—than they'd spend for a model that doesn't fit those needs as well.

So why would anyone think you should buy a computer—a Mac or a Windows PC—based solely on the price and a superficial spec sheet?

Hidden Costs

There are also costs that don't appear on the price tag. When you buy something like a radio, you pay the up-front price once and you're done. But computers require ongoing investment—and my experience is that Macs require less of it.

For one thing, buying a Mac gets you lots of great software—iLife and the other apps that come with Mac OS X; on a Windows PC you generally have to purchase equivalent software separately.

Buying a Windows PC also means buying software to protect it from viruses and other malware; you'll then have to pay perpetually to keep that software up-to-date. Regardless of where you stand in the Macs-are-more-secure debate, the truth is that there are currently no Mac viruses and there are only a few Mac malware programs (and the latter are easy to avoid if you exercise some simple, commonsense security precautions, such as not clicking on links in e-mails from senders you don't know). Someday that situation may

It's quite possible that owning a Mac will save you money in the long run.

change, and you'll have to buy the same kind of protection for your Mac that you would for a Windows PC. But for now, that's another expense you can avoid by buying a Mac.

Time and Money

Finally, there's the question of productivity. My time is worth something, and the faster I get things done, the better. So if a computer or an operating system makes me more productive, it's saving me money.

I'm not talking about the age-old Mac-versus-Windows ease-of-use debate; indeed, long-time Windows users will likely feel less productive on a Mac (at least at first). Rather, Windows machines present unique barriers to productivity we simply don't have on the Mac.

For example, even Windows vets bemoan the abundance of "crapware"—third-party programs of dubious utility that come preinstalled on so many PCs. These programs get in the way of your work—by launching themselves unexpectedly, by making themselves default apps without your consent, or just by forcing you to spend time uninstalling them.

Also, those security issues have led to the creation of Windows' User Account Control (UAC). UAC is meant to prevent malware from running at risky privilege levels. In practice, that means the OS regularly interrupts you to ask permission to perform many kinds of actions; one writer compared it to "having your mother hover over your shoulder while you work."

From what I've seen of Windows 7, it's a big improvement over its predecessors. Still, I think owning a Mac will continue to *save* you money in the long run compared to owning a Windows PC. And that's not something you'll see on a price tag. ⊠

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